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Utility Manager's Guide to Financial Planning

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This manual is written using non-technical terms to assist the utility manager or public official facing these problems in a comprehensive manner for the first time. It is not intended to be a textbook on financial management but rather to make the reader generally familiar with the topics. Since it is only a starting point, the guide also provides several references that can be consulted for more detailed information.

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The statements, conclusions, and recommendations contained herein are not to be construed as setting forth any legal or regulatory requirement and do not necessarily reflect the views of the U.S. Government or the U.S. Environmental Protection Agency.

TABLE OF CONTENTS

Section		Page
I	INTRODUCTION	I.1
II	FRAMEWORK FOR FINANCIAL PLANNING	II.1
	Organizational Independence	II.1
	Managerial Capability	II.3
	Adequate Staffing	II.6
	Financial Self-Sufficiency	II.6
	Public Support	II.6
	References	II.7
III	OVERVIEW OF THE FINANCIAL PLANNING PROCESS	III.1
IV	GENERAL UTILITY PLANNING	IV.1
	Capital Planning	IV.1
	Operations Planning	IV.4
	References	IV.7
V	FINANCING: ANALYZING THE OPTIONS	V.1
	Key Issues in the Analysis of Alternative Management Strategies	V.1
	Step 1: Review Availability of Grants and Low Interest Loans	V.4
	Step 2: Analyze Local Financing Options	V.6
	Step 3: Compare Options	V.14
	Step 4: Integrate Data into Budget Process	V.16
	Key Issues for Consideration	V.16
	References	V.18
VI	FINANCIAL PLAN/BUDGETING: A TOOL FOR MANAGEMENT AND CONTROL	VI.1
	Develop Budget Structure	VI.5
	Estimate Revenue Sources	VI.6
	Compile Initial Budget Requests	VI.6
	Compare and Prioritize Budget Requests	VI.8
	Review and Revise Annual Budget	VI.8
	Develop Budget Document	VI.8
	Approve and Adopt Budget	VI.9
	Implement Budget	VI.9
	References	VI.11

TABLE OF CONTENTS
(Continued)

Section		Page
VII	REVENUE PROGRAM	VII.1
	Identification of Cost Items	VII.1
	Compilation of Facility Operating Data	VII.3
	Classification of Customers	VII.3
	Allocation of Costs	VII.3
	Estimation of Annual Revenue Requirements	VII.4
	Establishment of Rates	VII.5
	Billing and Collection	VII.5
	References	VII.6
VIII	ACCOUNTING AND INFORMATION SYSTEMS	VIII.1
	Accounting Systems	VIII.2
	Cash Flow	VIII.6
	Information Reporting	VIII.7
	References	VIII.9
IX	REGULATORY REQUIREMENTS FOR UTILITY FINANCIAL MANAGEMENT	IX.1
	Financial Capability	IX.1
	Plan of Operations	IX.2
	User Charge System	IX.2
	Financial Management Systems	IX.4
	References	IX.4

LIST OF EXHIBITS

Exhibit		Page
II-1	Organizational Structures	II.4
III-1	Utility Financial Management Process	III.2
IV-1	General Utility Planning	IV.2
V-1	Financing Options	V.2
V-2	Comparison Matrix for Financing Options	V.15
VI-1	Example Format of a Cash-Based Financial Plan	VI.2
VI-2	Financial Plan/Budget	VI.4
VI-3	Utility Budget	VI.7
VII-1	Revenue Program	VII.2
VIII-1	Accounting and Information Systems	VIII.3

I. INTRODUCTION

Financing public wastewater treatment facilities has become a major endeavor for not only the construction but also the operation, maintenance, and replacement of such facilities. Funding capital improvement projects has generally been a joint effort between local utilities, the U.S. EPA, and often state governments with operation and maintenance expenditures being primarily a local responsibility. More recently, budget constraints within the federal and state governments have made capital improvement funds much more difficult to obtain and have shifted more financing responsibility to the local utility. The heavy local financing requirements have forced many communities to make capital improvement decisions without the prospect of outside assistance. In addition, the high operation and maintenance cost of many facilities constructed with federal and state financing is causing difficulties for communities. All local utilities will eventually be faced with the replacement and/or rehabilitation of much of their existing treatment and collection facilities.

Small-to-medium-sized communities throughout the U.S. are often more hard pressed than larger communities in affording wastewater treatment facilities. Smaller communities often have lower per capita income levels and lower bond ratings, which increase financing costs. Because of varying state and local priorities, a large portion of these communities have not yet been able to obtain funding assistance for their construction projects. Smaller wastewater facilities are often more expensive to construct and operate because they generally cannot obtain economies of scale.

Wastewater utilities serving communities of all sizes must face the reality of making financial decisions in an uncertain fiscal atmosphere. To be successful, a utility must have the ability to justify these decisions to the community. Questions that should be expected relative to a decision include:

- How much will it cost the users?
- What are the priorities involved?
- How is this expenditure justified?
- Where are the funds going to come from?
- Are the costs equitably borne by users and beneficiaries?

Financial planning and financial management provide effective means of answering these questions. Financial planning defines a utility's responsibilities, objectives, expectations, and priorities, and transforms that knowledge into a comprehensive operating strategy for acquiring capital and operating needs. Financial management can provide an analytical tool to evaluate the cost-effectiveness of alternative approaches as well as a management process to help direct the utility's future operations and decisions. It should be a continuous process that is maintained and updated. It should tie all major decisions back to the utility's overall goals and objectives. Some of the benefits inherent in effective financial management include improvements in the utility's ability to:

- set priorities between competing programs and needs;
- review the proposed scheduling of project construction and financing;
- monitor the progress and costs of projects initiated;
- evaluate the community's (and users') ability to support or fund projects or programs;
- compare funding approaches both in terms of capital financing and revenue generation, and establish policies to support the approaches selected; and
- assist other involved parties in reviewing various projects or programs and in providing input.

This guide was developed to provide utility managers and municipal officials with an overview of the elements of financial planning and the financial management process necessary to support a wastewater utility operation and keep it self-sustaining. This manual is designed to help the wastewater system owner/manager understand the financial management process. To accomplish this, there are sections on each major element of a financial management process, including:

- General Utility Planning;
- Financing;
- Budgeting;
- Revenue generation; and
- Accounting and Information Systems.

In each section the function is discussed along with the key elements necessary to make it work.

This manual is written using non-technical terms to assist the utility manager or public official facing these problems in a comprehensive manner for the first time. It is not intended to be a textbook on financial management but rather to make the reader generally familiar with the topics. Since it is only a starting point, the guide also provides several references that can be consulted for more detailed information.

II. FRAMEWORK FOR FINANCIAL PLANNING

Before considering the specific elements of the financial planning process it is useful to discuss the larger framework for financial planning. The utility's organizational and institutional structure and its political environment can have a significant effect on the utility's ability to perform. We have used the term "self-sustaining" to define a utility with the characteristics needed to operate efficiently and effectively over the long term. Self-sustaining is not the same as self-supporting. A self-sustaining utility possesses several other characteristics including:

- organizational independence;
- managerial capability;
- adequate staffing;
- financial self-sufficiency; and
- public support.

Each of these characteristics is briefly described in this section.

ORGANIZATIONAL INDEPENDENCE

Political and institutional constraints have a significant effect on a utility's ability to be self-sustaining. The organizational structure of the utility often affects:

- who controls the utility;
- how the utility is managed; and
- how the capital and operating revenues are generated.

There is no perfect institutional or organizational structure for a self-sustaining utility. The utility may take the form of a municipal department within a local government; a municipal authority in which the facility is owned by the local government but is managed and operated separately from general municipal activities; or an independent authority fully autonomous from the local municipality.

A municipally owned and operated utility usually exists as a department within the local government. In most cases, the department has direct responsibility for treatment facility operation and maintenance and relies on other government

departments for general management and support services such as accounting, personnel, data processing, and purchasing. The financial structure is either integrated into the general municipal accounts or maintained as a separate enterprise fund. Special taxing districts may be established as a means of paying debt for utility costs through ad valorem taxes. Budgets are usually part of the general municipal budget.

Municipal departments are most appropriate when:

- the utility operates within a single political jurisdiction;
- the majority of the population of that jurisdiction is served by the utility; and
- the local municipality is financially sound.

Typically, a municipal authority is operated by a governing board or commission appointed by the chief executive of the municipality. The commissioners' terms of office are frequently overlapping and generally not the same as the chief executive's. Financial and accounting systems are completely separate from those of the city and utility rates are set without municipal approval. The authority may be empowered to issue debt, although direct voter referendum or council approval of bond issues may also be required. The major advantage of this type of arrangement is its operational independence. This independence provides insulation from political pressure on budgets and rates.

An independent authority has similar operational independence. In addition, it assumes ownership of the utility. This type of authority is usually created by a special act of the state legislature which defines the structure and operation of the authority. The typical governing structure is a board or commission arrangement, which can be amended only by state legislation. Through creation of such an authority, a municipality can shift the burden of a substantial service to an essentially separate jurisdiction. The degree of control maintained by a municipality over these systems, once such an authority has been established, depends on the authority's enabling legislation. A municipality can ensure that the independent authority will be accountable to municipal interests by such mechanisms as continued control over the governing board appointment process, board composition, terms of office, provisions concerning the use of surplus revenues, and the like. In practice, however, a satisfactory balance between independence and accountability is difficult to achieve.

An independent authority type of operation is most appropriate when:

- two or more local governments are major participants in the utility;
- the utility is large and operates as a standalone operation;
- there are financial problems in the local government, particularly in raising capital;
- state and/or local law and requirements on the local government constrain facility operations; and
- local political issues interfere with utility operations.

There are advantages and disadvantages to each type of organization. These can be summarized in terms of:

- control and accountability;
- management; and
- finance.

Exhibit II-1 discusses these criteria for each type of structure. These criteria should be considered in establishing the utility's institutional framework. Exhibit II-1 summarizes the advantages and disadvantages of these types of organizational structures.

What is important, regardless of the organizational structure, is that the utility maintain a degree of independence from the short-term political influences that so often affect utility operations. This, of course, becomes increasingly difficult the closer the structure is to a municipal department.

MANAGERIAL CAPABILITY

A utility's operations will be only as good as the people responsible for managing its operations. Often wastewater utilities are managed by individuals who have worked their way through the ranks of the organization based primarily on their technical capabilities such as engineering or operations. When these individuals reach general management and line supervisory positions, their management skills must be developed.

A utility manager must have the skills to understand the operations and needs of the utility and the related technical,

EXHIBIT II-1

LOCAL GOVERNMENT-OWNED AND OPERATED UTILITY

	Advantages	Disadvantages
Control and Accountability	. maximum control by local government	. policy issues are subject to political pressures that are not utility-oriented (e.g., growth control)
	. closely accountable to elected officials	. key activities may be controlled by other departments (e.g., maintenance of sewer system, finance, billing)
		. rate setting is political and may not address utility needs
Management	. supported by other municipal departments thus avoiding duplication of functions (e.g., separate finance or purchasing functions)	. constrained by local government rules and regulations (e.g., salary, staffing, etc.)
		. may be too reliant on other local government departments for key services (e.g., finance, billing, etc.)
		. management subject to override for political reasons
Finance	. raising capital can be done without general obligation bonds	
	. short-term financial assistance may come from the general fund	. utility is less likely to be self-sustaining, requiring subsidies between utility and general fund
		. investors may be less willing to purchase bonds because of potential political pressures

EXHIBIT II-1 (Continued)

AUTHORITY-OPERATED UTILITY

	Advantages	Disadvantages
Control and Accountability	. control is independent of other local issues/politics	. not accountable to general government and local officials
	. relieves local government from political burden of establishing a self-sustaining utility	. loss of local government control of a major functional area
		. local government loss of a policy-making area
		. creates another level of "government"
Management	. utility has complete management system--not dependent on local government	. replicates existing support systems
	. utility can organize in best manner for operations, management only deals with utility issues	. may expand beyond need when not accountable to local government
Finance	. investors prefer independence from local politics	. loss of the use of generally cheaper general obligation bonds
	. financial issues not mixed with local government financial issues	. capital funding may be more expensive because it is primarily dependent upon revenue bonds
	. rate setting is not constrained by other political issues	. has no taxing power to act as a financial backup to user charges
	. utility is self-sustaining	

managerial, and regulatory environment in which it operates. Management skills important to a utility manager include not only those related to personnel, accounting, finance, purchasing, and data management but also require an understanding of regulations and their implementation and an ability to deal with the public and with government officials.

ADEQUATE STAFFING

As with managerial capability, it is impossible to have a self-sustaining utility without an adequate number of qualified staff to meet the utility's objective of providing safe, adequate wastewater treatment. In addition to operators and mechanics, this includes providing adequate staffing for the support services necessary for efficient operations, including:

- financial management;
- personnel;
- purchasing; and
- data management.

FINANCIAL SELF-SUFFICIENCY

To be self-sustaining, a utility must generate sufficient revenues to recover its total operation and maintenance costs as well as the capital costs of its present or proposed facilities. This requires not only a cost recovery system to support the utility but a complete financial management system to ensure maximum efficiency.

Financial self-sufficiency also implies the utility's ability to make the financial decisions necessary to plan for the future, and to maintain efficient and objective operations. When assessing a utility's financial self-sufficiency, an accounting system indicative of and responsive to the utility and its specific functions is a fundamental consideration. The accounting system allows the collection and communication of financial information needed for planning and decisionmaking. The accuracy of the revenue or billing system is generally directly related to the reporting accuracy of the accounting system. Finally, a complete financial management process is very important in maintaining financial self-sufficiency.

PUBLIC SUPPORT

Wastewater treatment is only one of many services provided to the public. As such it competes with these other services

for the community's financial resources. To be successful in this competition, public support must be established. The utility must be able to clearly and accurately communicate its needs and plans to the public. This is accomplished by involving the public at key decision points in the planning process. Several techniques may be used to maintain this support, including:

- public hearings;
- public meetings;
- advisory groups; and
- public information/education programs.

The technique used depends on the issues and type of decisions to be made.

REFERENCES

1. Peat, Marwick, Mitchell & Co., Comprehensive Diagnostic Evaluation and Selected Management Issues, prepared for U.S. EPA, February 1982, EPA-430/9-82-003.

III. OVERVIEW OF THE FINANCIAL MANAGEMENT PROCESS

As shown on Exhibit III-1, financial management for utilities is a continuing process. It includes the following major activities:

- conducting general planning;
- analyzing capital financing options;
- developing financial plans and budgets;
- recovering cost; and
- monitoring and updating accounting and financial information.

General utility planning provides the framework for all financial management. It identifies in advance the capital and operating needs of the utility, how they will be achieved, and by whom.

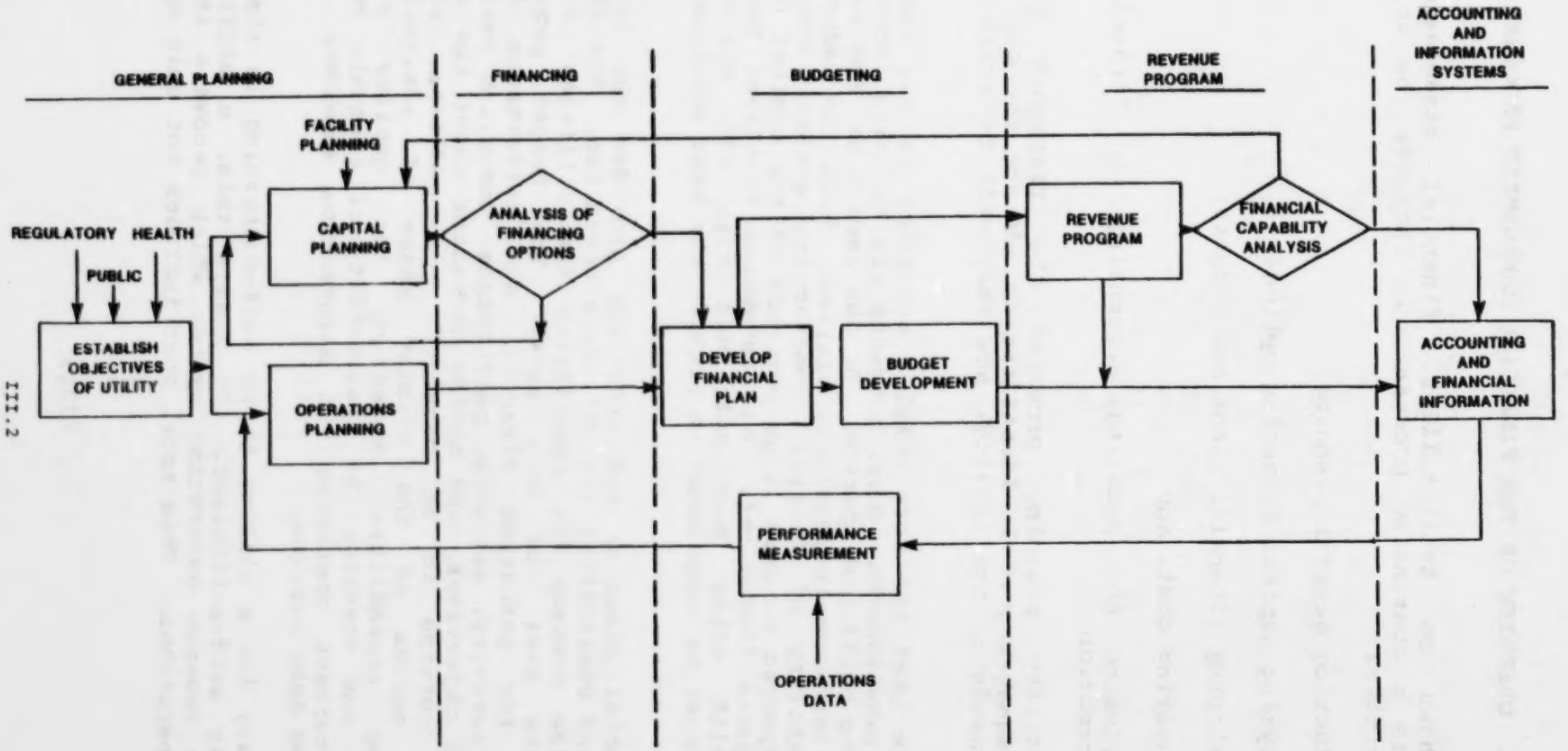
As the need for more complex solutions to our wastewater treatment requirements grows, projects are becoming increasingly expensive to build and operate. At the same time, the available funds are becoming increasingly limited. With the reduction in the availability of federal construction grants, communities will be expected to bear large portions of the capital costs of these projects themselves. As wastewater treatment facilities compete with other municipal priorities all options for financing must be considered to provide the best solution to the community.

Financial planning and budgeting provides the tools for planning and controlling the utility's operation. The financial plan is the roadmap for identifying the utilities' financial requirements over the long term. The budget provides a mechanism for gathering financial and performance data by treatment activity, reviewing performance, comparing performance to planned objectives, and making decisions about the cost and level of service to be provided. In addition, effective budgeting serves as the primary means of monitoring and controlling expenditure, measuring the quality of work performed, and ensuring the availability of adequate resources to meet current operating and maintenance expenses, capital outlay, and debt service.

The key for a utility to be self-sustaining is that it be financially self-sufficient. To ensure this, a utility must develop a revenue generating system which recovers its total cost of operations. This total cost includes not only operation

EXHIBIT III-1

UTILITY FINANCIAL MANAGEMENT PROCESS



and maintenance costs, but also the community share of the capital cost of the facilities. In developing a cost recovery system it is important to evaluate the financial capability of a community to undertake the proposed project. If the community is unable to support the operation, it must reevaluate the proposed expenditures to achieve an affordable utility operation. This may require deferral of capital projects, staging of construction, or reduction of design capacity.

Finally, a utility must have the means to collect, monitor, and update financial information essential to utility operations and decisionmaking. This requires a system of accounting and financial reporting to provide the utility's decisionmakers with the information necessary to make sound financial management decisions. The data collected in this system should be used to evaluate performance relative to the budget. This analysis will identify problem areas in the utility and help in making necessary revisions in the operating plan.

IV. GENERAL UTILITY PLANNING

General utility planning provides the framework for decisionmaking. It is the means of deciding in advance what the utility will do in the future, who will do it, and how it will be accomplished. Planning is like a road on which a person goes from one place to another. The planning process establishes goals where the person should begin and end, objectives or milestones where the person should be at various points in the trip, a timetable for the person's arrival and a measurement of how far the person has gone. When this person is "on course" the plan should show how far he or she has proceeded and how much remains to be accomplished. When the person strays off course, the plan should show where this occurred and what steps must be taken to get back on course.

Utility responsibilities are broad and complex. The community the utility serves is continually changing. New development for residential and industrial users is planned and constructed, resulting in a constantly changing environment where wastewater volume and strength characteristics are directly affected by community plans. Under these circumstances, a sound program of comprehensive planning is one of the utility manager's most important responsibilities.

General wastewater utility planning is concerned with the following major issues:

- What are the current and future requirements of the utility, including such issues as NPDES permit condition and population change?
- What resources are needed to respond to these requirements, including staffing, materials, supplies, and capital improvements?
- How can the utility move forward efficiently?

As shown on Exhibit IV-1, utility planning includes two distinct, though related, planning processes: capital planning and operations planning.

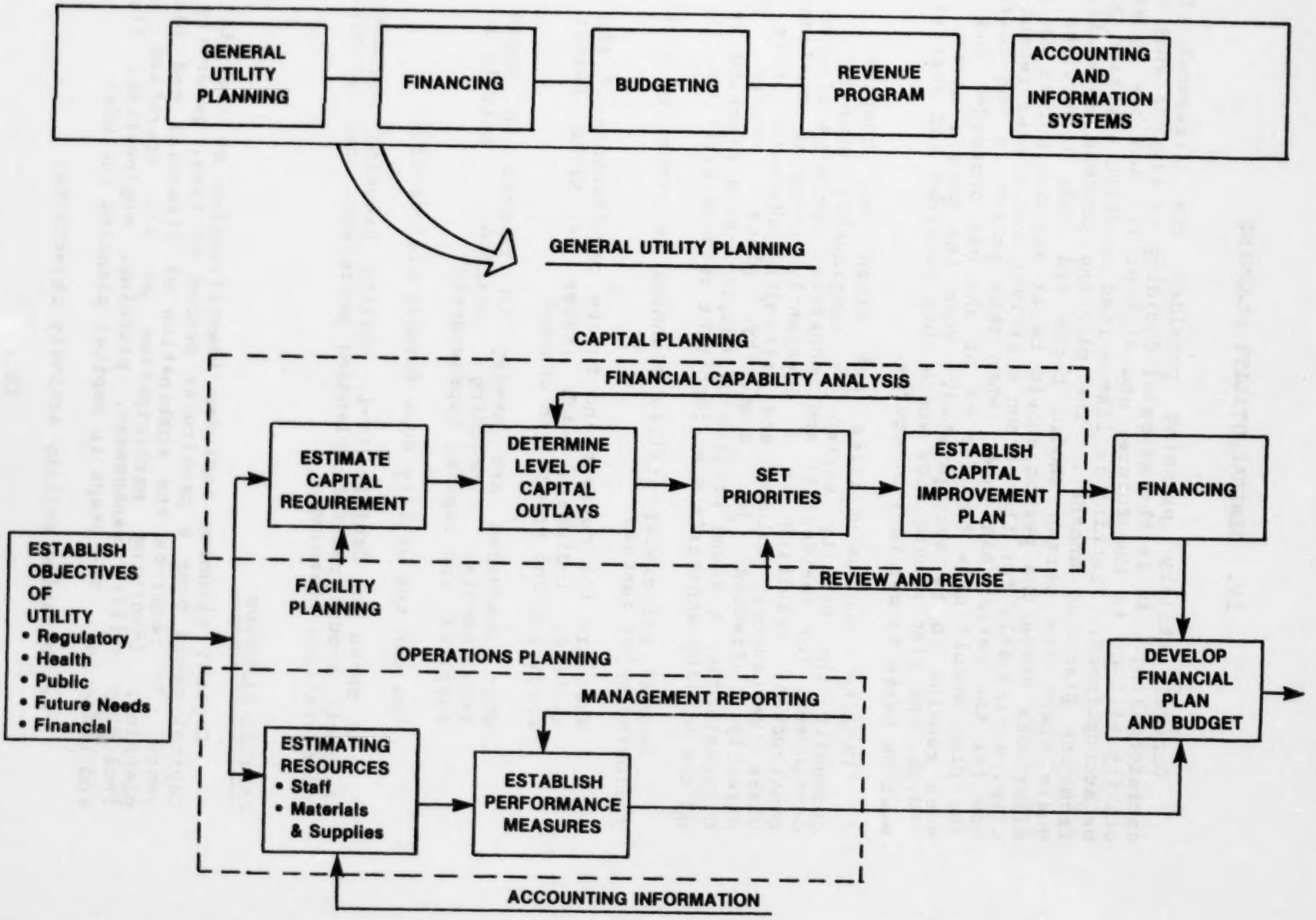
CAPITAL PLANNING

Capital planning includes identification of the utility's capital needs over a particular period of time, generally five years. It requires the combination of financial and facility planning, involving participation at all operating levels including utility management, planning, engineering, finance, and budgeting. The steps in capital planning include:

- establishing utility activity objectives;

EXHIBIT IV-1

UTILITY FINANCIAL MANAGEMENT PROCESS -- GENERAL UTILITY PLANNING



- estimating capital requirements;
- determining the capital outlay level;
- setting priorities;
- establishing a capital improvement plan and capital budget;
- analyzing financing alternatives; and
- providing periodic review and revision.

Objectives for wastewater utilities are a combination of regulatory requirements, public health considerations, future planning objectives, and local concerns.

After objectives are established, the capital requirements necessary to achieve these objectives must be determined. This requires evaluating alternatives and selecting the most feasible, which includes facility planning by engineers and planners.

Determining the acceptable level of capital outlay includes consideration of economic, political, and legal factors. The economic condition of the community and the financial capability of the users must be evaluated. (See Section IX--Regulatory Requirements for Financial Planning.) Political support for the project must be developed and legal requirements such as debt limits satisfied.

Priorities must be established for capital programs particularly those requiring several years for implementation. Financial resources available for capital outlay must be estimated to determine the best utilization of financing alternatives. (See Section V--Financing Alternatives.) This will result in a financial plan. Finally, the capital program should be reviewed and revised as necessary.

Capital planning includes the development of short- and long-term plans to maintain and expand the utility's physical facilities, as required. This includes planned expenditures for buildings, land, sewers, and major equipment with significant value and a useful life of several years.

The capital improvement program should include a list of each proposed capital item or project to be undertaken, the year it will be started, the amount to be expended each year and the proposed method of financing the expenditures. Based on this plan (usually a five-year projection), summaries of capital activity in each year can be prepared and included in the utility's annual capital budget.

The exact format of capital improvement policies will vary from utility to utility depending on where the utility fits into the overall municipal organization. All requests for capital improvements should be reviewed by the utility manager and forwarded to the appropriate official.

OPERATIONS PLANNING

Operations planning is directly related to capital planning because the purpose of the capital facilities is to facilitate accomplishment of operating objectives. Operations planning requires:

- establishing operating objectives;
- estimating necessary resources in terms of staff, materials, and supplies; and
- establishing performance criteria to measure the facility's efficiency and effectiveness.

Objectives should be established by wastewater activities. A wastewater utility's typical activities include:

- billing, meter reading, and customer service;
- laboratory;
- operations;
- maintenance;
- engineering/capital projects;
- industrial surveillance and monitoring; and
- general administration.

Objectives should be developed for each of these activities. Objectives should meet the following criteria:

- Result-oriented. They should focus directly upon what is to be produced.
- Specific. They should state what will be achieved in very narrow and precise terms. They should not encompass general statements of philosophy.
- Measurable. They should be stated in measurable terms to determine whether an objective has been attained.

- Timely. They should be attainable within a specific time frame. A specific point in time should be identified so that results can be evaluated when that point is reached.

- Relevant. They should be related to the utility's overall objectives. As such, the objectives should be geared to achieving effluent and sludge disposal standards, to cost efficiency, and to self-sufficiency.

After objectives have been developed, utility managers must develop performance measures to analyze achievements relating to these objectives. Performance measures are the yardsticks by which the results of an activity can be measured. Among the quantitative performance measures which can be used are:

- Wastewater loadings, which indicate the need for wastewater services. Loading measures are critical because they help utility officials explain the level of service required by the wastewater facility and give perspective to requests for funds to support wastewater activities.

- Workload measures, which indicate the amount of work actually performed by the utility.

- Efficiency measures, which establish the relationship between resources used (people, materials, and equipment) and results obtained. These measures used in conjunction with workload measures, give utility managers insight into how well resources are being utilized. Examples of efficiency measures are:

  - dollars per 1,000 gallons of wastewater treated;

  - kilowatt-hours of electricity per 1,000 gallons of wastewater treated;

  - kilowatt-hours of electricity per ton of sludge generated; or

  - pounds of chlorine per 1,000 gallons of wastewater treated.

Efficiency measures are derived by combining accounting expenditure date with other management information.

- Effectiveness measures, which determine how well an activity meets an objective. Effectiveness measures emphasize results. They show the progress made toward the achievement of an objective. An activity might be efficiently carried out at a limited cost and in a timely manner, but still not produce the desired results. The percentage of BOD and suspended solids removed are examples of effectiveness measures, and are available from management reports.

Utility managers must determine the types of measures which are needed to plan and monitor operations. This is part of defining management information requirements. Once determined, utility managers should instruct their staff or hire outside help to design information and accounting systems to capture and report this data.

For general planning to be effective, the following basic conditions should be met:

- The people who manage the wastewater utility should be involved in the planning process. This includes not only the wastewater utility manager and staff, but also local administrative and legislative officials.

- The current and future wastewater requirements in a community must be determined. This requires the utility manager to understand the type of development planned for the community.

- The public should be involved in decisions about current and future wastewater services. While the public can typically identify with drinking water activities, they have little perception of the process or problems associated with wastewater management. Public input can have a positive benefit in accomplishing utility goals and objectives and developing facility operating and capital budgets.

- Planning should be comprehensive, including all wastewater functions (financial, support, and facility management). Budget requests for wastewater services should include a determination of the service to be provided, an analysis of what will happen if the wastewater discharge is increased or reduced, and an analysis of the cost of service at the requested service level.

- Performance should be monitored in relation to the service levels requested in the plan. Regular performance monitoring can enhance the planning and replanning process.

When these general conditions are met, planning can become a vital part of the management process.

REFERENCES

This section is intended to give a brief overview of the general utility planning process for wastewater utilities. For more detailed information, a number of references are available, including those listed below. The reader is cautioned to review available references before establishing a general planning program.

1. Peat, Marwick, Mitchell & Co., New England Wastewater Management Guide, New England Interstate Water Pollution Control Commission, July 1981.

2. Moak, Lennox L., Local Government Finance, Municipal Finance Officers Association, August 1975.

V. FINANCING: ANALYZING THE OPTIONS

The analysis of financing options identifies the most cost-effective technique for funding the project. This analysis is closely tied to the review of the alternative strategies for managing the facilities. As shown on Exhibit V-1, management strategies can range from complete control of the design, construction, ownership, financing, and operation by the public entity (community, district, or independent authority) to full participation by private entities in all of these aspects. As federal and state construction funds are reduced, communities should examine alternative management strategies to determine the approach providing the most cost-effective operation.

This section first reviews the key issues to consider in analyzing management strategies and then presents a four-step process for revising financing options and integrating them into the management strategies. The four steps are:

- Step 1: Review the availability of grants and low interest loans and their role in financing projects.
- Step 2: Examine local financing options including:
  - conventional financing;
  - creative conventional financing; and
  - innovative financing.
- Step 3: Compare and select the most cost-effective option.
- Step 4: Integrate the estimated financing cost into the annual budget.

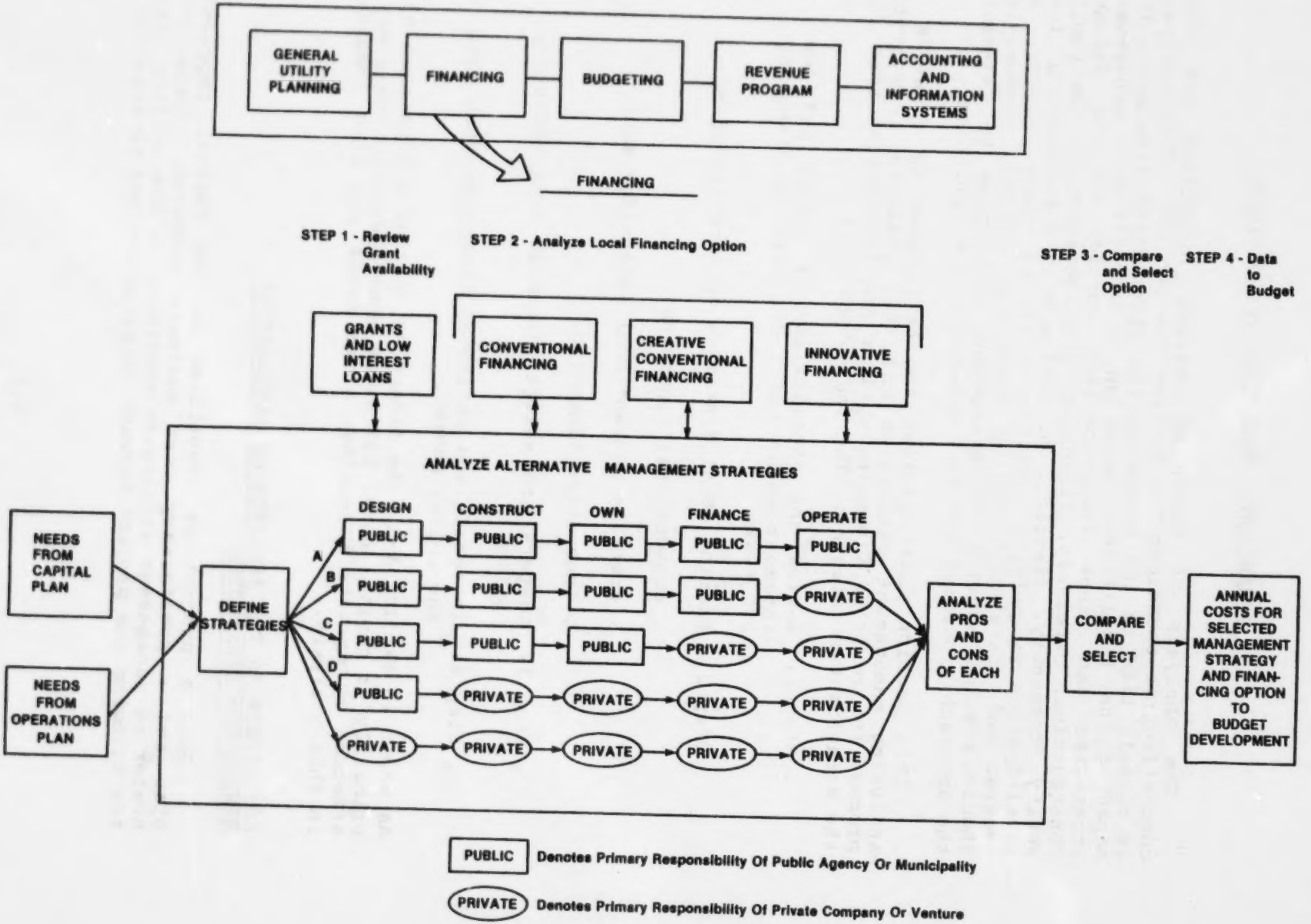
As shown in Exhibit V-1, the financing options analysis is aimed primarily at capital needs but since some operating costs may be affected by private financing, those needs are also considered in this analysis.

KEY ISSUES IN THE ANALYSIS OF ALTERNATIVE MANAGEMENT STRATEGIES

Once a project is identified in the capital improvement plan and a preliminary cost estimate prepared, there are a number of management strategies available to the utility manager for bringing the project through construction and to start-up.

EXHIBIT V-1

UTILITY FINANCIAL MANAGEMENT PROCESS – FINANCING OPTIONS



As shown in Exhibit V-1 the management strategies can range from full public control to full private control. Wastewater utility managers traditionally have followed Strategy A or B, which consist of combining EPA and state grant funds with local financing to construct a facility operated by public utility staff. In recent years some utilities have contracted with private engineering and operating firms to operate portions of a facility.

As EPA funds are reduced, utility managers must examine alternative strategies for constructing needed facilities. Several issues are important in selecting projects as possible candidates for private involvement, including:

- type of project (treatment plant, sewer, etc.);
- size of project;
- availability of federal funds;
- location of project;
- operating relationship to overall facility;
- local restrictions on voter approval of bond resolutions; and
- timing and need for additional capacity.

For example, if a municipality needs a plant expansion to handle new residential and commercial growth and, based on state priority list estimates, they may not receive federal and state funding for three to five years, the local community may decide to move forward now and not follow the EPA construction grants process.

Alternatively a community may have a sludge project identified as the next step in their capital improvement plan and analyze the feasibility of having private consortiums submit bids to design, construct, finance, own, and operate the facility. This process is common in the development of resource recovery projects and has received greater attention as EPA funds are reduced.

In general, capital-intensive projects are attractive to private entities. To obtain comparable bids from private firms either for a complete turnkey project (a full service contract) or for other private proposals, a well organized request for proposal (RFP) is needed. For reference, key issues to be covered in the RFPs include:

- length of contract;

- salvage value;
- ownership rights;
- liability;
- performance requirement and bond;
- penalties:
- relationship to state authorities and permits; and
- billing procedures.

The objective is to receive comparable bids for the project, allowing the manager to select the most qualified team for more detailed negotiations.

The development and analysis of alternative management strategies requires the manager to integrate financing, engineering, management, and legal options into a workable management system. The remainder of this section presents the steps followed in reviewing financing options and methods for obtaining accurate financing data to aid in the selection of a management strategy.

STEP 1: REVIEW AVAILABILITY OF GRANTS AND LOW INTEREST LOANS

A first step in the financing analysis, after obtaining a preliminary cost estimate for the project, is to determine the availability of federal and state grants and low interest loans. While the future timing and magnitude of various grant and low interest loan programs are uncertain, federal and state funds for wastewater treatment facilities will continue to be available in some form. If funds are not available, alternative management and financing strategies discussed above and in Step 2 should be analyzed.

EPA's construction grant program is currently budgeted to run through 1985, and EPA staff estimate that funding may continue through 1988 at the 55 percent funding level. The decision to accept either EPA construction grant funds or other federal or state funds hinges on the determination that the facilities thus obtained are indeed a local priority, and that the future financial implications (operating cost, manpower requirements, and so on) are acceptable.

The EPA, other federal government agencies, and several of the states provide a variety of grant programs that can be used for water pollution control facilities.[1] In addition to EPA grants, programs sponsored by the following agencies have been available for water pollution projects:[2]

- U.S. Department of Agriculture;
- Farmers' Home Administration (FmHA);
- U.S. Department of Commerce Economic Development Administration; and
- Department of Housing and Urban Development Community Development Assistance.[3]

This service can provide a list of all federal assistance funds for water pollution control. Details on availability, eligibility, and application procedures are also given in the Catalogue of Federal Domestic Assistance.[4]

Various states also make available grants for the purpose of wastewater treatment facilities. A catalog of the different state programs may be obtained from individual state water pollution control or development agencies, municipal leagues and county organizations, and area planning and development agencies. These sources can also provide information on state loan programs which can assist local municipalities in reducing the net cost of new projects.

A key issue when accepting federal and state grants is the impact that these programs may have and the constraints they may impose on private firm involvement in the development and operation of treatment facilities. The EPA has recently

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[1] See Municipal Finance Officers Association, The State's Role in Financing Municipal Wastewater Treatment Facilities.

[2] U.S. Environmental Protection Agency, Federal Financial Assistance for Pollution Prevention and Control, Washington, D.C., EPA Office of Analysis and Evaluation, March 1980.

[3] Available in all public libraries or by writing to the Government Printing Office (#COFA), 710 N. Capital Street, Washington, D.C. 20402.

[4] Catalogue of Federal Domestic Assistance, available in all public libraries or by writing to the Government Printing Office (#COFA), 710 N. Capital Street, Washington, D.C. 20402.

received clarification from the Office of Management and Budget that projects funded through the EPA construction grants program cannot be sold or used in a sale-leaseback arrangement between a municipality and a private company. In some cases where minimal EPA funds are available and only a 10 to 15 percent state grant is available, the utility manager should review the overall impact that accepting the grant will have on other financing options, such as the involvement of private firms in the program.

STEP 2: ANALYZE LOCAL FINANCING OPTIONS

The grant analysis will identify the portion of the project funded by state and federal agencies. The balance of the project will be funded by local financing. Local financing can include up-front assessments, connection charges, and long-term financing. Three categories of long-term financing:

- conventional;
- creative conventional; and
- innovative.

The local share of projects built with EPA grant funds will normally be financed with conventional or creative conventional financing.

Conventional Financing

The two most widely accepted forms of conventional financing are general obligation bonds and revenue bonds. A general obligation bond is a bond secured by a pledge of the general taxing power of the issuer. This is also known as a full-faith and credit obligation. A revenue bond is a security supported by the revenues of the operation.

In general, the securities market is sensitive to the differences between the two security types. At any given level of indebtedness, the broader the security base in terms of potential revenues to repay the obligation, the less the risk of default and the lower the interest rate.

With general obligation bonds, the general taxing power of the jurisdiction is pledged to pay both principal and interest, which usually results in lower interest rates. In many cases, voter approval may be required and debt and tax limitations usually restrict the use of this instrument. In recent years bond referendums have received greater interest and opposition from local municipalities, and utility managers have developed more sophisticated public awareness programs to educate the

voter on the value of the wastewater treatment facility.[1] Thirty-six states presently require affirming votes for general obligation bonds.[2]

Revenue bonds are supported by a pledge of a revenue stream from the wastewater utility (user charges, or some other income source) and can include coverage requirements, bond reserve funds, and other restrictive covenants. Coverage tests state that earnings must be greater than expenses by a specified margin and new debt may not be issued if the coverage ratio is reduced below this level.[3]

Creative Conventional Financing

General obligation and revenue bonds have been the major source of capital financing for wastewater utilities for many years. In recent years, changes in federal grant programs, new public involvement in bond referendums, volatile interest rates, and other factors have increased the need for creative modifications to the conventional financing techniques.

Creative conventional financing options have evolved into market adjustments to accommodate the needs of the issuer and demands made by the market, producing a viable financing option for both parties. Key creative conventional financing options of interest to the utility manager include:

- variable rate bonds;
- original issue discount;
- insurance; and
- tender option bonds.

The analysis and evaluation of these options is best completed by the utility manager's in-house financial advisors and other financial advisors who will work with the manager to select the most appropriate financing alternative.

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[1] See Richard Johnston, Some Techniques for Successful Sewer Bond Election Campaigns, Denver Sewage Disposal District, Denver, Colorado 80229.

[2] See Municipal Finance Officers Association, A Debt Management Handbook for Small Cities, page 12.

[3] J. Rowe McKinley, Financing Water Utility Improvements, Journal of the American Water Works Association, September 1983, page 456.

The first option, variable rate bonds (also referred to as floating rate bonds), are securities in which the yield to the bond holder varies with movements in market interest rates.[1] These floating rate securities offer, in many cases, lower financing costs in the short run and allow the issuer to share the interest rate risk with the investor. Important issues in considering this option include:

- pegging the floating interest rate to an accepted market index;
- stating the periods for adjustment of the index; and
- establishing high and low caps on the maximum and minimum limits on potential future adjustments in the interest rate.[2]

The second option, original issue discount bonds (OID), are offered with a coupon rate lower than the current market yields and a purchase price which is discounted from the par value.[3] These bonds allow the issuer to achieve a potentially lower interest rate overall, but result in a shift of a portion of market risk from the investor to the issuer. A variation of an original issue discount bond would be a zero coupon bond where large discounts are offered with a zero coupon on the issue.

Municipal bond insurance shifts a credit risk from the issuer to a third party. In recent years the number of municipal bonds being insured has grown rapidly, with over 1,200 issues being insured with a par value of nearly $7 billion.[4] The decision to purchase insurance should be based on an analysis of the savings on interest expense versus the premium paid for the insurance.

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[1] See Municipal Finance Officers Association, Creative Capital Financing for State and Local Governments, page 63; also see American Waterworks Association, September 1982 issue, Creative Financing Techniques for Water Utilities, (Paul C. Williams of John Nuveen and Company, 209 S. LaSalle Street, Chicago, Illinois 60604).

[2] MFOA, pg. 63, and Williams, pg. 447.

[3] Williams, page 447.

[4] Peter C. Trent, "Emerging Opportunities in Tax-Exempt Finance: Perspective of the Marketeer", Shearson-American Express.

Tender option bonds (also commonly referred to as put option bonds) limit the investor's exposure to long-term market risk by giving the bond holder the option of returning the bond to the issuer at par plus accrued interest at some future date prior to stated maturity.[1] This future date could be from three to five years and effectively allows the issuer to convert the investment to a shorter maturity period, thus allowing the issuer to take advantage of lower short term interest rates for the initial period of the project. The appeal of the lower short-term interest rate is offset by a requirement that the issuer have credit capacity to redeem the bonds if the holder requests redemption after the specified period.

Innovative Financing

The utility manager can also take advantage of several innovative financing techniques developed over the last few years, again in reaction to market demands and the needs of the municipalities. These options include, in one way or another, the participation of private companies in the planning, design, construction, financing, ownership, or operation of wastewater treatment facilities. There are five basic arrangements which establish specific roles for the private and public sector players. They include:

- contract operations;
- tax-exempt municipal lease;
- sale-leaseback;
- sale-service contract; and
- full service contract.

Some of the features, legal considerations, and advantages and disadvantages of each arrangement are discussed below, followed by a discussion of key issues associated with implementation of privatization arrangements, and recent actions by states to examine these issues.

Tax-Exempt Municipal Lease

A tax-exempt municipal lease (also commonly referred to as a lease-purchase agreement, a conditional sale, a conditional-sale lease, or a capital lease) is a "method of financing the acquisition of public facilities or services by state and local governments whereby the lessor extends credit to

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[1] Williams, page 446.

the governmental lessee and transfers to the governmental lessee all responsibilities of ownership for a period of time equal to the economic life of the asset. At the conclusion of the term of the lease, the governmental lessee may purchase the asset for a nominal consideration."[1]

This type of an arrangement offers full control of the property to the municipality and allows the private lessor or third party to exclude the interest portion (if specifically stated as interest) of the lease payments from the gross income for Federal income tax purposes. An important characteristic of a tax-exempt lease is a provision that allows the agreement to be terminated at the end of the current fiscal year. This clause prevents the lease from being classified as a long-term obligation or debt.[2] This arrangement has been used by many communities to obtain capital equipment. Analysis of a tax-exempt lease may also include the cost of financing the lease, usually expressed as a percentage of prime, versus the opportunity cost of the alternative--investing money that would have been paid up front to purchase the asset.

Sale-Leaseback

For municipal wastewater treatment plants, a sale-leaseback is "an arrangement in which the owner of the sewage treatment plant (most likely a municipality or sewer district) sells it to a financial institution or another buyer or group of buyers and simultaneously executes an agreement to lease the property back from the buyer."[3]

The repurchase of the plant by the city at the end of the lease must be at fair market value. This type of arrangement is only feasible for municipal wastewater treatment plants currently owned by a city or sewer district and not constructed with state or federal EPA grant funds. This is highlighted in a March 14, 1983, letter from Michael J. Horowitz, counsel to the Director of the Office of Management and Budget, to the Honorable Robert M. Perry, General Counsel of the Environmental

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[1] Eden, Greg, The Tax-Exempt Municipal Lease, Eden Hannon & Company, January 1, 1982, page 1.

[2] Municipal Finance Officers Association, "A Guide to Municipal Leasing", Chicago, Illinois, April 1983, page 29.

[3] Ibid, page 19.

Protection Agency, which stated as a clarification of OMB Circular Number A-102 that "a leverage lease proposal, or other lease arrangement involving real property partially funded by federal grants, is prohibited by this provision."

Therefore, this arrangement would be aimed primarily at a new facility constructed without federal funds where a municipality would finance the entire project with general obligation or other forms of local financing, sell the new facility to a group of investors, and then lease it back. Under this arrangement, the buyer or group of buyers would be able to take advantage of depreciation allowed on the buildings and equipment in the facility. One source of funds for the private purchase of the asset could be the proceeds from the sale of industrial development bonds by a local economic development authority. This would reduce the overall cost to the group of buyers for purchasing the facility and, when combined with the allowable depreciation on the equipment, could make a favorable investment for the group of buyers.

In recent months, this arrangement has received a great deal of attention at the federal level, and there is currently legislation proposed which will change the depreciation schedules for equipment involved in a sale-leaseback arrangement between a private party and a municipality. This will make the investment less attractive to the private investor. The ultimate fate of this arrangement will be determined once that legislation is finalized.

Sale-Service Contract

In certain situations, a municipality can sell a wastewater treatment facility constructed without federal or state funds to a private company which would then own the facility, operate it, and provide a wastewater treatment of service to the municipality. Under this arrangement, the private company is then able to take advantage of the depreciation of the buildings and equipment and the investment tax credits, since they will be providing a service to the city. The above mentioned federal legislation is examining these arrangements to determine if this service contract is actually an operating lease, and if it is determined to be an operating lease, the investors could lose the investment tax credit and be subject to restructured depreciation schedules. Here again, this option has not been implemented extensively and the changing nature of the federal legislation makes it difficult to determine if this arrangement will be feasible for municipalities in the future.

Full Service Contract

If a local municipality is not going to receive federal or state funds for the construction of a project and seeks qualified private companies to design, construct, finance, own,

and operate a municipal treatment plant, the municipality could then enter into a full service contract (sometimes referred to as a full service agreement or a turnkey project) with that private company. The municipality would agree to pay an annual charge to the private company and in turn collect user charges from the individual residents of the community.

In some states private firms have expressed interest in this option and have contacted states and municipalities to discuss its feasibility. The option is best implemented when the local community needs to construct a new plant and feels that the design, construction, and operation of the plant would best be accomplished by a private firm. The utility manager would first develop specifications for a full service contract and either qualify firms and negotiate or request full bids from the companies.

Key Issues for Innovative Financing

A number of important issues come to light under innovative financing arrangements, most notably for the full service contract. First, the service contract for the municipality would last a number of years (20 to 30), and therefore restrictions on the length of contracts that municipalities may enter into must be reviewed and possibly changed to accommodate these more complex arrangements.

Second, procedures for accepting competitive bids for the construction, financing, ownership, and operation of the facility may have to be modified to allow selection of the most qualified firm and negotiation of contract details and charges to the municipality. Some states have requirements regarding bidding procedures, and special language may be needed to allow negotiated contracts which include major construction projects. Clarifying legislation would be needed especially in the areas of service contracts and installment purchase contracts.

Third, the private company that operates the wastewater treatment plant would likely want to provide the service to the municipality and therefore be treated as any other private entity, and thus not be required to conform to Public Utilities Commission requirements. A clear opinion on the ultimate status of these private companies in relation to the utilities commissions would have to be rendered before the agreements are entered into with the municipalities. In Wisconsin a bill was recently introduced which will place private sewer services and facilities under the control of the Public Service Commission. The impact of this action may be to discourage the development of privately owned and operated wastewater treatment plants (see Wisconsin Senate Bill 218).

A fourth issue is the status of the National Pollutant Discharge Elimination System (NPDES) permit and other enforcement and administrative problems. Some states' staff have indicated that they would continue to issue the discharge permit to the municipalities, who would in turn work with the private companies to ensure compliance. This raises a number of questions. Who would be fined for non-compliance? Would city officials be held for the private firm's violations? These issues would have to be negotiated to the state's satisfaction in the agreement between a city and a private company.

Enforcement of pretreatment requirements will also be an issue in full service contracts. Who will go on-site to the industrial property and collect samples? What powers will the private company need to regulate the quality and quantity of wastes entering the plant?

A fifth issue is the disincentive to private operation created by state and federal grant programs. Private firms feel that they can provide low annual costs to municipalities but they cannot compete with federal and state grant programs that cover up to 60 percent of the project. Some private firms propose a modular building block approach to meeting future needs, thus lowering capital and operating costs in the short term. They would then operate the facility with fewer staff and benefit from central purchasing, payroll, and management, assuming that they ran several plants in the state.

Private companies in the wastewater industry have indicated that they are interested in designing, constructing, financing, owning, and operating municipal facilities if the issues identified above are clarified and if the package they prepare for the city is not in competition with a state grant program. For example, Wisconsin currently provides a 60 percent state grant to those municipalities that are not going to receive money from EPA. A private company, in analyzing the cost of providing the service to a municipality, can approach, but in most cases cannot beat, the resulting annual cost that the municipality will bear if they take the 60 percent grant. Therefore, the states are faced with a question: whether to maintain a 60 percent grant program and potentially exclude private entry into the construction of treatment plants, or to institute a sliding grant program where a municipality can accept either a 60 percent grant for public construction and ownership or a 30 percent grant for a project built by private financing entities. The city could put the 30 percent grant funds into a construction trust which would be used to pay off the annual charges to the private company. There are a number of legal and administrative ramifications to these options but these are realistic considerations facing states when they design their grant or aid programs.

STEP 3: COMPARE OPTIONS

The next step in the process is to integrate the financing options analysis into alternative mangagement strategies and select an overall strategy and financing plan. This could include a traditional EPA funding scenario with private operation or a completely private project. The selection of the most appropriate financing option for a project depends on several factors:

- sources of funds and terms:
- net annual local cost;
- level of risk;
- administrative and management issues; and
- legal issues.

To compare each option, the matrix shown in Exhibit V-2 should be completed. For each option, the terms and costs are calculated and a discussion developed on the administrative, legal, and management issues.

The cost comparison includes analysis of:

- source of funds.
- constraints (bond covenants and so on).
- terms:
  - interest;
  - special provisions;
  - term; and
  - risk.
- Estimate of cost:
  - Annual costs;
    - principal; and
    - interest.

EXHIBIT V-2

COMPARISON MATRIX FOR FINANCING OPTIONS

Description	OPTIONS A EPA plus Coventional Financing	B EPA plus Creative Conventional Financing plus Private Operations	C Innovative Financing--No EPA or State Grants
Sources of Funds			
EPA			
State			
Conventional			
Creative Conventional			
Innovative			
Total			
Risk			
Costs			
. Bond Offering			
. Legal			
. Official Statement			
. Annual Costs			
. Principal			
. Interest			
. Service contract			
Administrative			
Management			
Legal			
Summary			

- Bond offering costs:
  - legal costs; and
  - offering statement.

For additional information on each cost element, see EPA's Financial Capability Guidebook.

Options can be combinations of grants, low interest loans, conventional financing, and innovative financing as shown in Exhibit V-2. The matrix identifies the lowest cost option and the associated risk. The manager evaluates the overall acceptability of the options based on a review of the matrix and consideration of other local projects, priorities, and capabilities.

STEP 4: INTEGRATE DATA INTO BUDGET PROCESS

The collective annual costs of selected financing options for each project are brought together in a pro forma budget analysis which can be integrated into a revenue requirements analysis and a financial capability analysis. (See Exhibit V-2 and discussions in the next section.)

KEY ISSUES FOR CONSIDERATION

Several key issues can affect the selection of the most effective financing option. First, wastewater utility construction and operation plans are constrained by the financial capacity and revenue raising capabilities of their service area. This means that as capital improvements are proposed, financing options are identified, and the annual cost to the municipality is calculated. A preliminary estimate is then made of the sewer service charge resulting from the project. A financial capability analysis is performed to determine if the financing option and the resulting sewer service charge are within acceptable limits for the local community or sanitary district. As the ongoing process discussed above continues, the utility manager more clearly understands the pace at which capital improvements can be brought on-line, and the overall policy for implementing the needed water quality improvements can be scheduled.

Second, the analysis of the financing options will include the tradeoffs necessary to implement certain financing strategies. For example, private financing may require the utility to give up some control over the day-to-day operations of certain portions of the facility.

When developing and analyzing financing alternatives, the utility manager's and organization's policy position on the ownership of the equipment and facilities needed for operation of the utility should be considered. In recent years, private entities have proposed to own and operate wastewater facilities and provide a service by contract to the utility. This practice presents policy considerations for the utility manager and requires the governing body to address ownership and liability issues.

The potential involvement of private sector firms and their labor force in the operation of a wastewater utility will require negotiations with the utility's labor union. Private firms providing contract operations have developed strategies to successfully work with local municipal employees. Utility managers and governing bodies must be aware of the existing union's needs and the potential cost savings that may be offered by a private firm, and have the administrative flexibility to select the best alternative.

A companion issue to private involvement is the need for utility planners to understand that the inclusion of an administratively complex federal and state grant program (which would require additional engineering and inspection for compliance with state and federal regulations) could add significant administrative burdens to the local utility and delay implementation of the project.

Third, some options may not apply to all utilities. Many of the options discussed in this section may be constrained in their applicability to the local utility manager. For example, local or state regulations may require a full bond referendum for a general obligation bond. This may restrict the utility manager's ability to use this financing vehicle as frequently as necessary. Local debt capacity limits or state-imposed debt capacity limits could also eliminate general obligation and revenue bond offerings and force the utility manager to examine other types of financing. In some cases an already burdened local community may not have the financial strength to take on new projects and special financing assistance from the state may be required. The schedule for implementing major capital improvement programs may have to be reviewed.

A fourth major issue is the concern over overlapping debt that may result from regional projects. Utility managers must understand the impact of their debt financing on the affected jurisdictions and realize that other public improvements are occurring simultaneously which place additional burdens on the same tax base. Regardless of what appears to be a successful low cost financing option, financing may be constrained by a region's inability to support additional general obligation bonds.

A final consideration for the utility manager and the board is establishing what level of risk the utility is willing to take in short- and long-term financing arrangements. To obtain lower interest rates, the manager working with the financial advisors will analyze various financing options, trading off risk and interest costs. Understanding the interest-risk tradeoff and its implications will permit a logical selection of the most appropriate financing options. The major task facing the utility manager is the development of a financing plan which is integrated into an overall management strategy.

REFERENCES

This section is intended to give a brief overview of the financing process for wastewater utilities. For more detailed information, a number of references are available including those listed below. The reader is cautioned to review available references before establishing a financing program.

1. Williams, Paul C., "Creative Financing Techniques for Water Utilities." American Water Works Association, September 1982, p. 443.

2. Peterson, John and Wesley C. Hough, "Creative Capital Financing for State and Local Governments." Municipal Finance Officers Association, March 1983.

3. Rosenberg, Phil, "A Debt Management Handbook for Small Cities and Other Governmental Units." Municipal Finance Officers Association, Chicago, Illinois, 1978.

4. Scully, L.J. and M. Paret, et al, "Evaluation of Alternative State Aid and Other Programs for Financing Construction of Municipal Wastewater Treatment Facilities." Peat, Marwick, Mitchell & Co., et al, October 1983.

5. Nolan, Jr., Robert B. and Robert E. Foren, "Strategic Financial Planning," Journal of American Water Works Association, September 1983.

6. Innovative Financing for the Clean Water Program, Technical Exchange Seminar Proceedings, Association of State and Interstate Water Pollution Control Administrators, April 1983.

7. Schraufnagel, F.H., Municipal Wastewater Treatment Self-Sufficiency in Wisconsin, Wisconsin Department of Natural Resources, April 1983.

8. Eden, Greg, "The Tax-Exempt Municipal Lease," Eden Hannon and Company, January 1982.

9. Municipal Finance Officers Association, A Guide to Municipal Leasing, Government Finance Research Center, April 1983.

VI. FINANCIAL PLANNING/BUDGETING: A TOOL FOR MANAGEMENT AND CONTROL

Financial planning and budgeting are closely related in their development and use. While budgeting is primarily concerned with current and short-term financial information, a financial plan is intended to project long-term information usually based on the operations and capital plans. A financial plan may be considered as a pro forma cash flow or income statement which includes expected revenue, expenditure, and cash balance or income data. The plan uses current and historical budget data to develop a foundation for revenue and expenditure projections, and then integrates information developed within the capital improvement and operations planning processes. This plan is basically a schedule of anticipated expenditure and revenue activities representative of the overall utility's objectives and priorities.

The financial plan may use the current year budget to make projections which, in conjunction with capital improvement projections, may be used to make future year budgets. A sample format for a cash-based financial plan is shown in Exhibit VI-1. In developing a financial plan, expenditure projections are made first and then used to determine the revenue projections. Projections may be initially made for operations, maintenance, and debt service expeditures related to the existing facilities. Historical trends of actual costs may be used to develop the growth, inflation, and other cost increase factors anticipated. Increases should be projected by individual cost items such as labor, materials, and energy, and then compiled into an operations and maintenance cost figure, as shown in the exhibit. Also, cost reductions from situations such as debt retirement or equipment obsolescence should also be included.

Projections related to proposed new facilities may be made or taken directly from a capital improvement plan developed earlier. The method(s) of financing proposed or selected for capital expenditures are integrated into the projections and could determine the level of debt service anticipated. All operations and maintenance costs associated with the capital expenditures should be included and escalated over time. Adding the expenditure data relating to the existing and new facilities provides the total expenditures expected for the utility.

Revenue projections may also be separated into those relating to existing and those relating to new facilities. This allows the utility to determine those additional revenues needed for any new facilities proposed and whether the revenues required to support the new facilities can be equitably generated from users. Revenue needs are generally assessed by

EXHIBIT VI-1

EXAMPLE FORMAT OF A CASH-BASED FINANCIAL PLAN

	1983			1984			19XX		
	Existing	New	Total	Existing	New	Total	Existing	New	Total
. Beginning Balance									
. Revenue Sources									
. User charges									
. Connection fees									
. Interest on investment									
. Miscellaneous									
Total Revenues									
. Expenditures									
. Operation & maintenance									
. Equipment replacement									
. Debt service									
Total Expenditures									
. Net Annual Balance									
. Ending Balance									

revenue source and used to determine the levels of fees and charges necessary to develop the cost recovery or rate system. This is discussed in more detail in Section VII--Revenue Program.

It is important for comparison purposes to break out the financial plan in terms of existing and new facilities to understand how proposed facilities will affect overall costs and the associated need for additional revenues. Alternative capital improvement plans (or projects) may also be integrated into the overall plan, allowing alternative measurements of the revenue amounts required and the user charge or fee impacts.

Budgeting provides the utility manager with a mechanism for gathering financial and performance information by wastewater treatment activity, reviewing the merits of each of these activities, and making decisions about the level and cost of services provided. The budget also serves as the main source of information for monitoring and controlling facility costs, measuring the quality of work performed by employees, and ensuring the availability of adequate resources to meet current operating, maintenance, and capital expenses.

Wastewater utility managers are concerned with a number of different budgets, including:

- operation, maintenance, and replacement budgets;
- capital budgets; and
- revenue budgets.

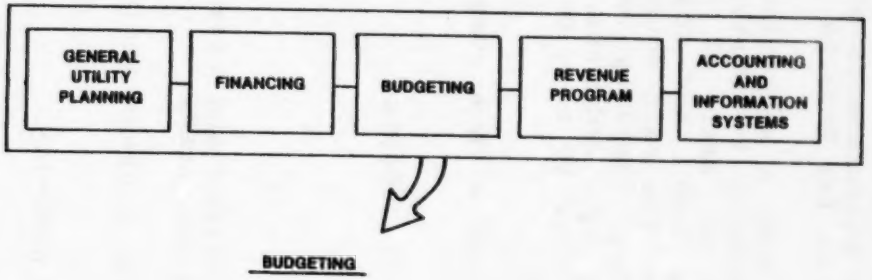
Each of these budgets have different time frames and correspond to the utility manager's different informational needs.

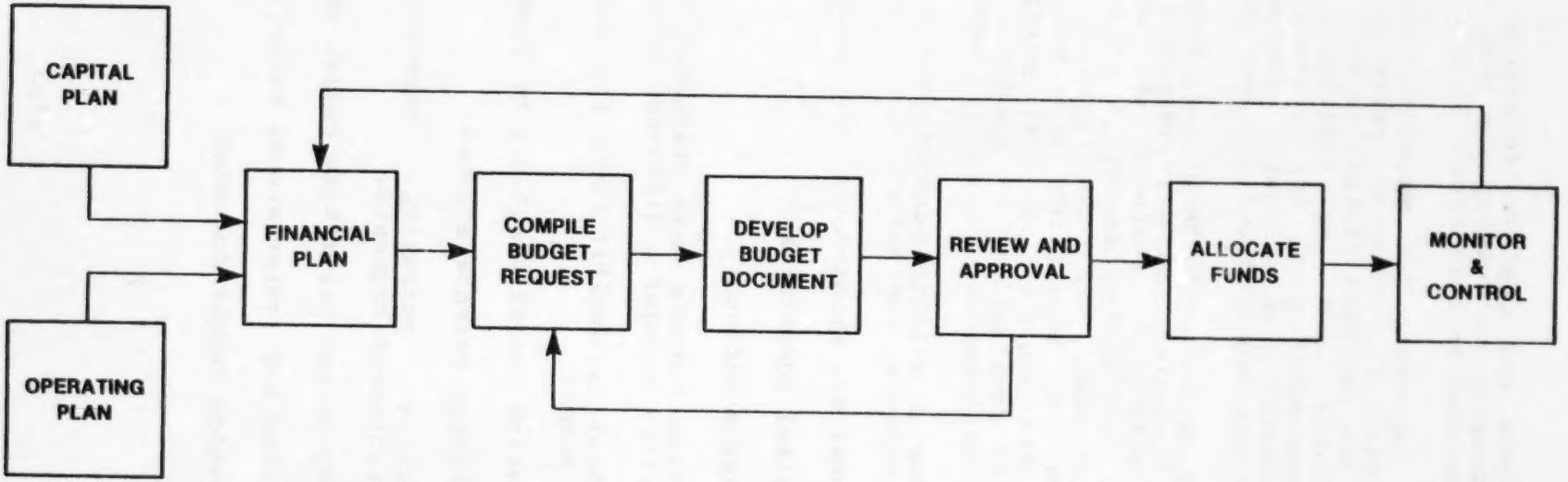
As shown on Exhibit VI-2, the budgeting process includes a number of steps:

- Develop budget structure by item and activity.
- Estimate revenue sources.
- Compile operating expenditure and capital improvement requests.
- Compare and prioritize budget requests.
- Review and revise annual budget.
- Develop budget document.

EXHIBIT VI-2

UTILITY FINANCIAL MANAGEMENT PROCESS -- FINANCIAL PLAN/BUDGETS





- Approve and adopt budget.

- Implement budget.

This section reviews each of these steps, as well as considering some of the policy issues involved in developing a wastewater utility budget.

DEVELOP BUDGET STRUCTURE

The first step in the budgeting process is to develop a budget framework providing the structure around which budget requests can be identified and allocated. This framework will also be the structure within which actual expenditures can be identified through the monitoring and reporting system. As discussed in Section VIII--Accounting and Information Systems, wastewater utilities usually account for revenues and expenditures through a fund-type accounting system. This would include an enterprise fund to track proprietary type activities such as wastewater treatment. The budget structure should mirror the accounting structure. The operating and maintenance budget should reflect the major functions of the utility. Examples of wastewater functions include:

- operations;

- maintenance;

- laboratory;

- billing, meter reading, and customer service;

- industrial surveillance, monitoring, and pretreatment programs;

- general administration; and

- support services.

Normally, state statutes or local ordinances mandate that the budget be presented in a "line item" format. Line items may be direct or indirect. Examples of direct and indirect expenditures are:

- direct:

  - personal services for salaries, overtime, and longevity;

  - operating expenses for materials and supplies, travel, utilities, and chemicals;

- maintenance expenses for vehicles, equipment, and buildings; and
- capital outlay for equipment.

- indirect:
  - debt service for principal payments and interest on debt;
  - fringe benefits for pensions, employee insurance, vacation, and sick pay; and
  - overhead for support services such as accounting, payroll, data processing, purchasing, revenue collection, and investment costs.

As shown on Exhibit VI-3, a typical wastewater utility line item budget includes direct cost. Frequently indirect costs necessary for a utility operation are included in other department budgets (i.e., debt service costs may be contained in the treasury budget). Direct costs should be identified and recovered through the cost recovery system. (See Section VII--Revenue Program.)

Exhibit VI-3 also identifies expenses by function. This format, or variations on it, will help the utility manager develop a performance measurement system and identify cost of service so as to develop an equitable cost recovery system.

ESTIMATE REVENUE SOURCES

The budgeting process should also identify revenue resources by type and amount. Typical revenue types include general property tax, sewer service charges, fees, interest on investments, and miscellaneous revenues.

COMPILE INITIAL BUDGET REQUESTS

After the operating expenditure requests have been developed by the supervisors or department heads, they are combined with the capital requirements for the next year that were developed in the capital improvements plan. This constitutes a preliminary document consolidating the utility's total dollar requirements for the year to come. This document is reviewed by the utility manager for accuracy, completeness, and consistency with utility policies. In addition, expenditures are adjusted to reflect any changes in costs anticipated in the next year as a result of known activities. For example, wages and fringe benefits may be adjusted to reflect anticipated changes resulting from ongoing labor negotiations.

EXHIBIT VI-3

WASTEWATER TREATMENT UTILITY BUDGET

Line Item	Function/Activity					
	Pumping	Operations	Maintenance	Laboratory	Administration	Total
Personal Services						
Salaries						
Overtime						
Fringe Benefits						
Total Personal Services						
Expenses						
Insurance						
Vehicle Repairs, Fuel, etc.						
Supplies						
Electricity						
Gas, Oil, and Diesel						
Maintenance						
Chemicals						
Equipment Rental						
Training						
Travel						
Parts						
Equipment Replacements						
Contingencies						
Total Expenses						
Capital Outlay						
Improvements						
Expansions						
Principal and Interest on Existing Debt						
Betterments						

COMPARE AND PRIORITIZE BUDGET REQUESTS

Once the preliminary expenditure budget has been developed, it is compared to the revenue projections developed in the previous step to determine the magnitude of the differences between available revenue resources and anticipated expenditures. Depending on the significance of the difference, the supervisors and the department heads may be asked to defend their expenditure requests or explain various items. Expenditure requests are then prioritized in terms of their contribution to the overall operation of the utility so as to determine those items requiring reduction or deletion to balance the budget.

REVIEW AND REVISE ANNUAL BUDGET

The prioritized expenditure budget is reviewed with the supervisors and department heads to identify those items to be reduced or deleted from the budget. After this review, the proposed budget will be reworked to bring projected expenditures into line with available resources so that a balanced preliminary budget can be developed. The concept of a balanced budget is desirable, and is sometimes a legal requirement for municipal utility operations. It is of course not always possible to reduce expenditure requests to a level where they are balanced by anticipated revenues. Sometimes increased taxes or user charges must be projected to generate sufficient funds to balance the crucial expenditure elements. To the extent that it is necessary to increase revenues, the magnitude and impact of the increase should be identified in the revenue budget presented to the governing body.

DEVELOP BUDGET DOCUMENT

Once the preliminary expenditure and revenue information has been defined, the information is compiled into a budget document. This document should include a budget narrative describing the utility operation, the major assumption, the budget, major issues the legislative body should address, the significant changes in the proposed budget from the current year, and any impact of the proposed budget on the rate structure or service charges. The narrative is an important element of the successful budget document. A number of different groups such as council members, finance committees, and the public will be reviewing utility requests, and many of these people will have little knowledge of the utility. The budget document should educate the reader on utility operations and requirements and provide direct input from the utility manager to the legislative body.

As indicated, the official budget document should contain an official estimate of revenues, setting forth a history of revenues by major categories such as property taxes, fees, and user charges. It should also include the utility manager's recommendations as to how revenues should be raised to finance the proposed expenditures.

The budget document should include a summary of the proposed expenditures with appropriate comparisons between expenditures from previous years. It is often useful to provide additional details which break down expenditures by various activities so that readers can understand the interrelationships among the various expenditure items in the budget.

APPROVE AND ADOPT BUDGET

The budget document is formally submitted to the governing body either as a whole or through various committees. The utility manager should be invited to explain the requests contained in the budget. Citizens or the public are usually provided an opportunity to present their views regarding the budget at this time. After due consideration, the governing body should approve the budget and adopt it at that time or send it back to the utility for further revisions. Generally this budget is not intended for approval on a line item basis but rather as an overall budget for the utility. This raises the question of budget implementation.

IMPLEMENT BUDGET

Budget implementation can be broken down into two separate steps: allocation, and control and monitoring.

Allocation

One of the first steps in the administration of an approved budget is to allocate the overall appropriation according to the programs, activities, or items of expenditure. The purpose of this allocation is to break large expenditure items into categories that can be controlled and reserved for specific activities. Allocation also provides a way to account for and monitor expenditure. Generally this allocation is accomplished by the same method used to develop the budget initially, and should mirror the accounting system.

Once approved and allocated, the adopted budget should be distributed throughout the utility. Each employee should understand what is expected of him or her, and when and how performance will be measured.

Control and Monitoring

The adopted budget should be controlled and monitored throughout the year by means of periodic reports comparing planned (budgeted) expenditures and revenues to actual performance. The approved budget must be entered into the accounting system so that effective accounting control can be established. A designated utility official should be responsible for monitoring the budget during the year. Key elements of a budget control system include:

- line item identification;
- restrictions on the use of funds;
- periodic reporting;
- budget adjustment; and
- independent postaudit.

As indicated, the budget allocation should be broken down by line item and should mirror the accounting system. Limitations on the use of the funds may include requiring approvals for requisitions to purchase equipment, a check on availability of funds, and a full encumbrance system. Adjustments to budgets are almost always necessary to account for unforeseen changes in operations. Generally, this requires an amendment to the budget, either to shift monies among line items or to increase the overall budget. It is important that procedures are developed to permit budget adjustments in a timely manner so that year-end deficits may be avoided.

Routine budgetary reports are an effective management information tool for both utility management and the governing body. Reporting budget-to-actual expenditures is one of the most effective ways of controlling a budget. A report of expenditures made against budgets should be prepared at least monthly. The report structure should correspond to the budget classification structure used in the budget document. This statement of actual and estimated (budgeted) revenues should also be prepared on a monthly basis. These reports are important to measure utility operations from both the expense and revenue sides.

Periodic budget adjustments, either transfers from line items or overall increases in the budget, may be required for various reasons. The utility should adopt a standard transfer and adjustment procedure.

A post audit by an independent accountant provides a degree of verification and control for the utility manager and governing board.

REFERENCES

This section is intended to give only an overview of financial planning/budgeting for wastewater utilities. For more detailed information, a number of references are available, some of which are listed below. The reader is cautioned to review these references before developing a financial plan/budget.

1. Moak, Lennox L., Local Government Finance.

2. Municipal Finance Officers Association, An Operating Budget Handbook for Small Cities and Other Governmental Units.

VII. REVENUE PROGRAM

A utility must be financially self-supporting to be self-sustaining. This requires the establishment of a program to generate sufficient revenues to recover all costs in full. To accomplish this, a sewer service charge system must be developed, one which recovers operation, maintenance, and equipment replacement (OM&R) costs as well as local capital cost. For facilities financed in part with federal construction grant money, the utility must recover 100 percent of its OM&R costs from users in amounts proportionate to their respective usage. This portion of the sewer service charge is referred to as the "user charge." (See Section IX--Regulatory Requirements for Financial Planning.)

As shown on Exhibit VII-1, developing a revenue program requires a number of steps including:

- identification of cost items;
- compilation of facility operating data;
- classification of customers;
- allocation of costs;
- estimation of annual revenue requirements;
- establishment of rates; and
- billing and collection.

The following discussion will review each of these steps.

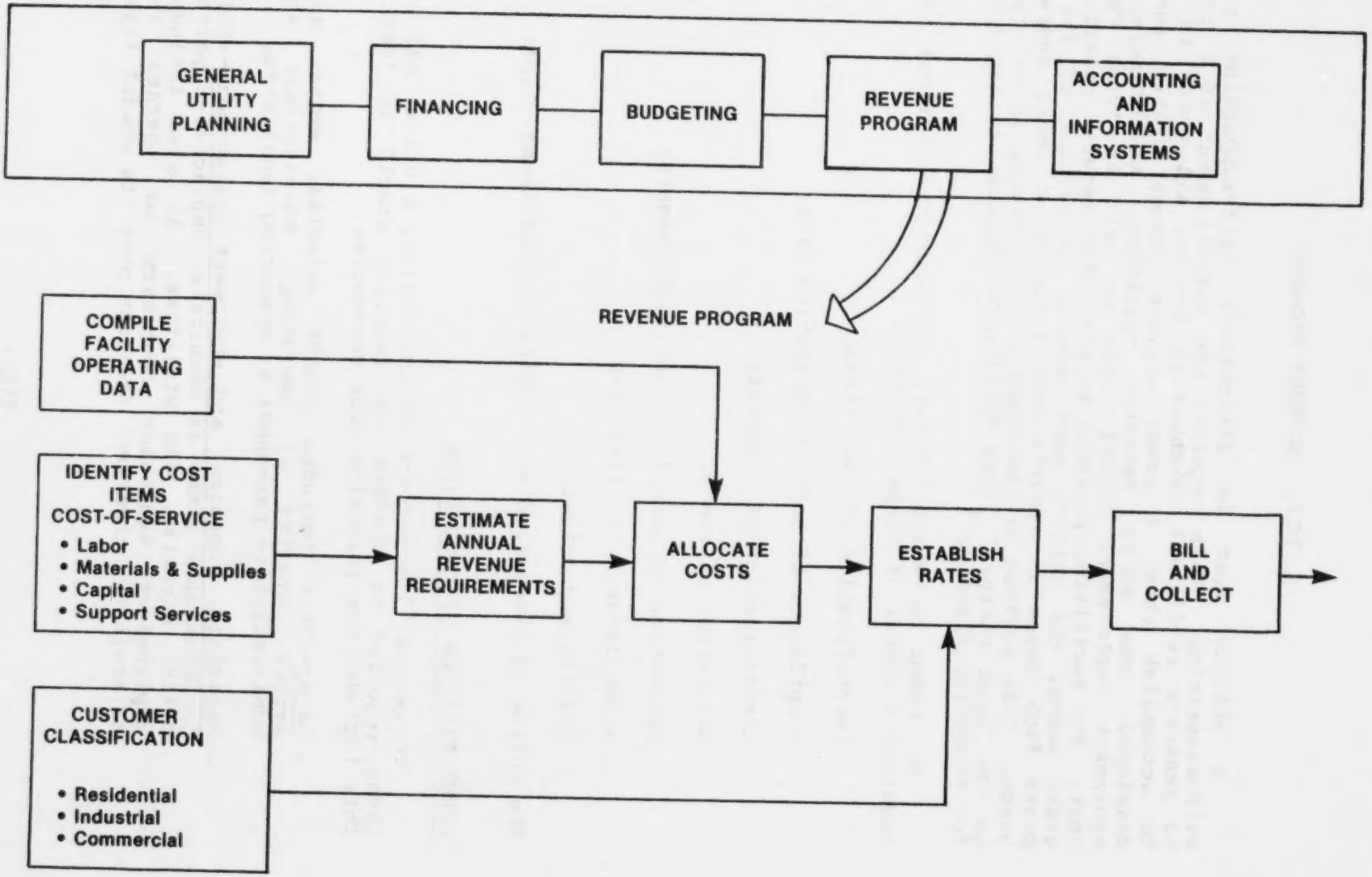
IDENTIFICATION OF COST ITEMS

To recover 100 percent of the utility's costs, all expense items required to operate the facility should be identified. This includes the following cost categories:

- Labor--This includes direct salaries, wages, and fringe benefits of operating, maintenance, and administrative personnel at operating facilities.
- Materials, supplies, and equipment replacement--This includes such items as chemicals, replacement parts, office supplies, and utilities. It also includes replacement equipment necessary to operate and maintain the treatment facility over its useful life.

EXHIBIT VII-1

UTILITY FINANCIAL MANAGEMENT PROCESS -- REVENUE PROGRAM



- Capital costs--This includes the local share of the total capital cost of the facilities usually reflected by debt service.

- Overhead--This includes administrative costs including interdepartmental services for such support activities as personnel, purchasing, or data processing.

Existing accounting records should be reviewed to identify these cost items and allocate them to the particular cost category.

COMPILATION OF FACILITY OPERATING DATA

The utility's operating data must be compiled to provide the basis for allocating costs and establishing rates. Operating data includes wastewater parameters such as flow, biochemical oxygen demand (BOD), and suspended solids (SS).

CLASSIFICATION OF CUSTOMERS

Customers must be identified individually or by user class to provide a basis for allocating utility costs to customers in proportion to their use. Customer classifications typically include:

- residential;
- commercial;
- industrial;
- institutional; and
- governmental.

Each of these customer classes may have different wastewater characteristics and therefore the cost of service to provide for each of these customer classes may be different. A customer data base should be established which identifies all customers and their use of the system.

ALLOCATION OF COSTS

Once the cost of treatment has been identified and properly classified, these costs should be allocated to specific cost centers reflecting particular activities or unit processes within the utility. These cost centers should be identified to

the extent necessary to account for different types of treatment. The allocation is necessary to ensure that each user pays a fair share of the cost of treatment. For example, the cost of pumping is almost entirely related to flow characteristics whereas the cost of sludge disposal is almost entirely related to BOD and SS. Therefore, an industrial user who discharges highly concentrated wastes should pay proportionally more for sludge disposal but very little for pumping. By allocating costs to particular cost centers and by knowing the relationship between that cost center and wastewater treatment characteristics, an equitable allocation of cost to users can be developed.

ESTIMATION OF ANNUAL REVENUE REQUIREMENTS

The wastewater utility's revenue requirement is the amount of cash needed to finance utility operations. The basic formula for computing this revenue requirement is:

total cost of service - nonuser charge revenue = revenues to be recovered through user charges

Each equation component is briefly discussed below.

Cost of service is the total amount of money needed to pay all OM&R, capital expenditures, and overhead for wastewater services. These costs were identified in an earlier step.

Wastewater operations may be financed by a number of user and nonuser revenue sources, such as:

- general property taxes;
- special assessments;
- federal and state grants;
- interest on investments;
- special fees; and
- user charges.

Of these, many are nonuser charge revenue sources. These nonuser charge revenues are deducted from the cost of service, to estimate the revenue requirements from users.

ESTABLISHMENT OF RATES

User charges are established to recover the revenue requirement from each user or user class in proportion to its use of the system. Revenues are allocated to each user class based on flow (residential) and flow and strength (industrial equivalent). This allocation is based on the OM&R cost of service for treating flow and strength characteristics.

A number of rate structures can be used to recover OM&R costs. Which is best depends on the utility, the type of users on the system, and the ability to measure wastewater characteristics and/or water consumption. If all the system's users discharge wastewater with similar characteristics, such as domestic waste, then the charge system can be based on flow alone. If water consumption is metered, these records could be used to estimate wastewater flow. If system users also discharge high strength waste, such as industrial waste, then a system must be developed to recover the additional costs of this additional treatment.

The common types of rate structures include:

- flat rate per customer--This is appropriate for utilities with similar customers and no water meter records.
- volume rate--This is based on all users' water consumption having similar discharges.
- volume rate plus surcharge--This is for users with extra strength discharge.
- quantity/quality rates--This is based on unit cost of treatment for each wastewater parameter such as flow, BOD, or SS.

Often a user charge system will use a combination of the above structures for different user classes. For example, residential users may pay a flat rate while industrial users may pay a quantity/quality charge. Ad valorem based systems may also be used in some cases. (See Section IX--Regulatory Requirements.)

BILLING AND COLLECTION

The final step in establishing a revenue program is to develop a mechanism for billing and collecting user charges. To accomplish this, billing procedures must be established to collect usage data from individual customers, compute bills based on the selected rate structure, and prepare and mail

invoices. Equally important is a mechanism to ensure prompt and complete collection. Thus procedures for tracking outstanding bills and follow-up steps for delinquent accounts are required.

A revenue program is not something instituted once a year--it is a process planned, implemented, and monitored on a year-round basis. It is also a time consuming process. Cost separation between OM&R and capital cost, flow and strength data gathering, and user class identification all take time. The approval and implementation process takes additional time. Public notification and education or awareness programs are necessary, and also take time. Still more time must be devoted to properly addressing rate increases. Thus utility managers should be prepared to spend the time required to develop and maintain a proper user charge system.

REFERENCES

This section is intended to give only an overview of the revenue generating program of a wastewater utility. For more detailed information, a number of references are available, some of which are listed below. In addition, Section IX summarizes the U.S. EPA's regulatory requirements for user charge systems. These should be reviewed before developing a detailed revenue program.

1. Peat, Marwick, Mitchell & Co., Comprehensive Diagnostic Evaluation and Selected Management Issues, prepared for U.S. EPA, February 1982, EPA 430/9-82-003.

2. U.S. EPA, User Charge Guidance Manual, 1984.

3. Water Pollution Control Federation, et al., Financing and Charges for Wastewater Systems, 1973.

VIII. ACCOUNTING AND INFORMATION SYSTEMS

An important part of the overall financial planning process is a system for identifying utility costs, allocating them to the appropriate activity, and monitoring utility performance. These activities are accomplished through the accounting and financial information system. Most municipal activities are supported by general taxes and are not intended to be self-supporting in a business sense. Rather, the type of accounting systems used for local governments are intended to ensure financial accountability and legal compliance with legislative restrictions. Because control is the primary purpose, municipal accounting systems are aimed primarily at tracking expenditures rather than revenues.

Governments use "Fund Accounting" to track their various operations because different types of activities must be accounted for separately, and many revenue sources have restrictions limiting their use. Fund accounting emphasizes separate and detailed accounting and reporting for each separate type of government activity. The major types of funds include:

- governmental;
- fiduciary; and
- proprietary.

Governmental funds account for such public service activities as police and fire protection. Fiduciary funds account for resources where the government acts a trustee or other fiduciary agent. Proprietary funds account for business type activities financed through direct charges, including such services as wastewater treatment. Accounting requirements for these different types of activities vary. A primary difference in requirements for a proprietary fund is the need for revenue accounting. In a governmental fund, where the revenue resource is property taxes, the accounting is relatively simple and the number of entries relatively small. By contrast, in a proprietary fund where revenues are derived from individual charges, each user constitutes an individual account, and thus such activities as wastewater utilities have accounting needs comparable to those of private enterprise.

Wastewater utility operations should be accounted for separately as a self-supporting proprietary activity. This means that an "Enterprise Fund" accounting system should be used. This system must be capable of accurately reflecting revenues and expenditures. In addition, because the activity is ongoing, the accounting system must be set up to account for activities from year to year. This is different from most

governmental activities, which are funded on an annual appropriation basis.

As competition for limited tax revenues increases, municipal accounting systems are being used more as tools for efficient management. This is accomplished by using more performance-standard accounting and other financial reporting.

As indicated on Exhibit VIII-1, there are a number of components to an accounting and financial information system for wastewater utilities. This section briefly reviews these elements.

ACCOUNTING SYSTEMS

A wastewater utility should establish an accounting system consistent with both sound financial management principles and the utility's overall objectives. The steps to developing an accounting system are shown on Exhibit VIII-1. As indicated, the accounting system should be established as an enterprise type accounting system, and it should be consistent with Generally Accepted Accounting Principles (GAAP) for this type of operation.

Enterprise funds are used to account for wastewater operations where there is significant potential for financing the utility's operating and maintenance costs through sewer service charges. This type of accounting is used even if the municipality decides not to finance the service through sewer service charges, or in situations where the utility wants to know its profit or loss. An enterprise fund is designed to gather total costs, including depreciation, and to indicate the extent to which sewer service charges are sufficient for recovering total costs.

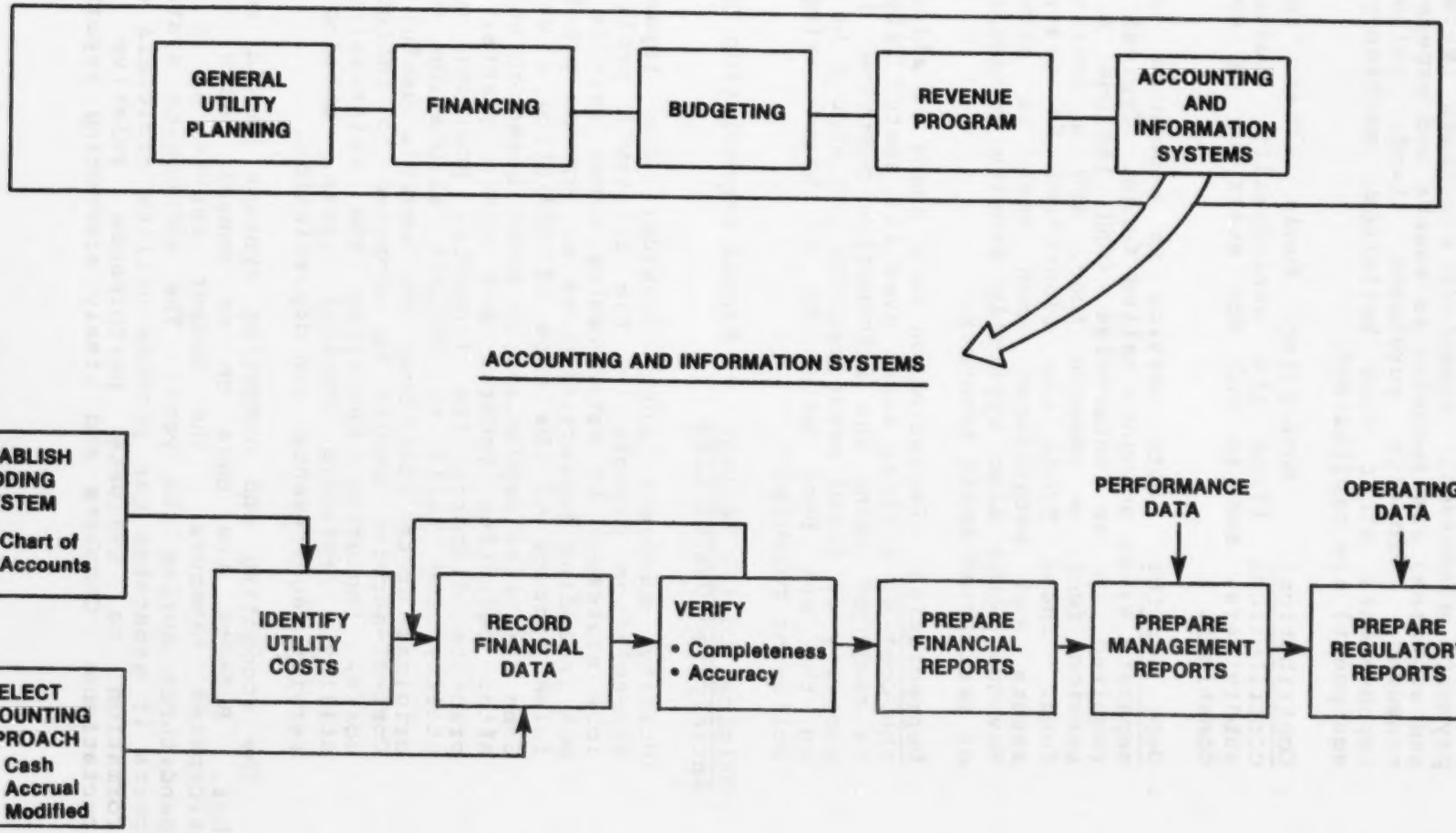
The characteristics of enterprise fund accounting for wastewater utilities include:

- Budgetary Considerations. Enterprise funds may be operated independently or as part of municipal operations, depending on local legal requirements. Budgetary control is important to sound financial management regardless of legal requirements. Therefore, the utility should prepare, adopt, and monitor an annual budget, even though it is accounted for as an enterprise fund.

- Basis of Accounting. Enterprise funds are usually accounted for on an accrual basis. Revenues and expenses are recorded when earned or incurred, respectively, regardless of when cash is received or

EXHIBIT VIII-1

FINANCIAL PLANNING PROCESS –
ACCOUNTING AND INFORMATION SYSTEMS



payments disbursed. Inventory purchases (materials and supplies) are recorded as assets and expensed as consumed. Property purchases (land, buildings, improvements other than buildings, machinery and equipment) are capitalized.

- Contributions. Enterprise funds often receive contributions (from the municipality, customers, subdividers, and so on) for start up or capital donations.

- Debt Service. Debt service is accounted for in separate asset accounts called funds. Typical funds required in an enterprise fund include a debt service fund, a reserve fund, and a contingency fund. These funds are identified as restricted assets and established when cash is received. Revenue bonds also typically require establishment of restricted asset accounts.

- Depreciation. Depreciation is a means of allocating the cost of a fixed asset over its useful life. It is computed using the information contained in the property or fixed asset records and should be based on the net book value of an asset using the following formula:

$$\frac{\text{Original Cost - Salvage}}{\text{Anticipated Useful Life}} = \text{Annual Depreciation Expense}$$

Utility managers must consider the impact of depreciation expense on the utility's profit and loss statement in establishing sewer service fees. Not including depreciation as an expense provides a false picture of the cost of operating a utility. Some utilities depreciate an asset based on net cost after deducting federal and state grants. This practice distorts the financial position of the utility and fails to reflect allocation of the original gross cost over the asset's useful life. Cost-of-service should be computed to include all costs, including operating and maintaining the utility, replacing capital items, meeting debt service requirements, and depreciation.

The accounting and budgeting systems should reflect each other. Budgets are made on an annual basis to allocate anticipated revenues. The budget serves as a guide for expenditures during the year. The accounting system and the reports it generates can provide utility officials with needed information to evaluate performance relative to budget expectations. Complete and timely accounting reports covering

financial condition, actual performance against budgeted expenditures and revenues, and cost of providing specific wastewater activities are critical ingredients to successful management.

Types of Cost

Knowing full costs is essential for sound financial management. The sum of all activity costs (including all line items) is the utility's cost-of-service.

Wastewater utilities incur a variety of costs. These costs may be recorded at various levels of detail. Line items are normally used to classify the types of goods and services purchased. If additional detail is needed, the major line items may be subdivided into components. For example, utility expenses may be further identified as heat, light, and power. Typical line items for utility operations include:

- personal services.
- operating expenses.
- maintenance expenses.
- equipment replacement.
- capital outlay.
- depreciation.
- debt service.
- fringe benefits:
  - pensions;
  - employee insurance;
  - vacation;
  - sick leave; and
  - holiday.
- overhead:
  - accounting;
  - payroll;
  - data processing;

- purchasing;
- collection; and
- investment costs incurred by the municipality for the wastewater utility, if applicable.

CASH FLOW

Cash flow represents an important component of financial management for a wastewater utility--the process of managing a utility's cash to ensure timely billing, collection, and cash availability to meet payroll, vendor, and debt service payments and to maximize the amount available for investment.

A utility is primarily dependent on either general property tax or sewer service charges to meet its obligations. In instances where the municipality provides general property tax revenues and pays utility obligations, the utility has very little if any involvement with managing cash flow. However, where the utility is primarily dependent on sewer service charges to finance its activities, cash flow management is a vital ingredient of sound financial management.

Elements of a sound cash flow system include establishment of effective cash information systems, timely billing and collection systems, disbursement procedures, and cash budgeting, as described below:

- Cash Information Systems. A cash accounting system should record and report daily receipts. To know the daily cash balance, the utility should record the beginning daily balance, receipts, disbursements, and ending daily balance.
- Timely Billings and Collections. Development of policies and procedures which bring dollars into the utility as quickly as possible is critical to sound financial management. Periodic, timely billing for wastewater services is critical to ensure the maximum available cash to meet obligations. Regular billings followed by late payment notices and late payment penalties can encourage more prompt payments.
- Disbursement Procedures. From a cash management standpoint, disbursements should be timed to remove cash from the treasury at the latest possible moment while maintaining payment dates. A system of aging payables should be established to enhance disbursement control, and the utility should take

advantage wherever possible of vendor discounts. A system for calculating the relative advantage of the discount should be installed.

- Cash Budgeting. Cash budgeting involves estimating specific receipt and disbursement dates. It is not budgeting for revenues (billings) and expenditures (obligations). Cash budgeting can make a significant contribution to cash flow. Two major elements of cash budgeting include:

  - preparing an annual cash flow budget based on historical receipts and disbursements and on knowledge of future events; and

  - updating the cash flow budget on a regular basis throughout the fiscal year.

INFORMATION REPORTING

The primary purpose of an accounting system is to provide financial and management reports for use in managing the utility. As indicated for wastewater utilities, the categories of accounting information include:

- financial reporting;

- management reporting; and

- regulatory reporting.

Financial reporting is used for several reasons. It is used for presentations to outside parties in annual reports and bond offerings. It is also used internally by management to understand and control operations. The standard financial reports used for utility operations include:

- the balance sheet showing how much the utility is worth at a particular time;

- the statement of revenues and expenses showing how much the utility earned or lost during a particular period; and

- the statement of change in financial position indicating sources and use of funds.

The standard reports are usually accompanied by notes to financial statement explaining the significance of the major items. In addition, other financial indicators are frequently

computed to provide specific information, including such indicators as:

- revenue bond coverage;
- insurance coverage;
- trends of revenue and expenses;
- details of future debt service;
- details of fixed assets; and
- ratio analysis such as user charge cost per household.

In addition to financial reports, the accounting system can also generate management reports to assist the utility manager in evaluating the utility's performance. Typical management reports generated are:

- cost reports broken down by function and major expenditure;
- analysis of cost by particular activity or cost center such as pumping, treatment, or sludge disposal; and
- performance reports expressed in terms of cost per unit of output such as cost per million gallons treated.

Accounting systems also provide information for rate and regulatory reporting. This includes information used in developing cost of service analyses to compute the rates necessary for revenue requirements.

To be useful to a utility manager, financial reports must have the following characteristics:

- Timeliness--They must be generated quickly to be used for making operating decisions.
- Clarity and conciseness--They must be easily understood and easily interpreted in a format useful to utility managers.
- Responsiveness--They must provide the information needed to manage a utility.

REFERENCES

This section is intended to give a brief overview of the accounting and information systems of wastewater utilities. For more detailed information, several references are available. The reader is cautioned to review these references before attempting to establish an accounting or information system.

1. Municipal Finance Officers Association, Governmental Accounting, Auditing, and Financial Reporting.

2. Moak, Lennox L., Local Government Finance.

3. Municipal Finance Officers Association, An Accounting Handbook for Small Cities and Other Governmental Units.

4. Municipal Finance Officers Association, A Guidebook to Improve Financial Management for Small Cities and Other Governmental Units.

5. New England Interstate Water Pollution Control Commission, New England Wastewater Management Guide.

IX. REGULATORY REQUIREMENTS FOR UTILITY FINANCIAL MANAGEMENT

In addition to good utility management practice, a number of components in the financial management process are required by regulation under the Clean Water Act. These include:

- a demonstration by a grantee that it has the legal, institutional, managerial, and financial capability to ensure adequate billing and operation, maintenance, and replacement of the treatment works. Replacement costs include those costs necessary to maintain the facility without expanding, improving, or extending a facility's life.

- the development of a draft plan of operation that includes an adequate budget identifying the basis for determining the annual operation, maintenance, and replacement costs.

- the development of a user charge system that will produce revenues adequate for the operation, maintenance, and replacement of the system.

- the development of an adequate financial management system that will accurately account for the revenues generated by the system and the expenditures for operation, maintenance, and replacement.

The following paragraphs address several of the regulations regarding each of these financial planning requirements.

FINANCIAL CAPABILITY

In evaluating different alternatives, emphasis has traditionally been on finding the least costly alternatives that achieve certain water quality standards. In other facility planning efforts this has been done by trying to evaluate all alternatives on a common basis, either in terms of annual equivalent costs or present worth. These techniques, however, do not tell us whether or not we can afford any of the alternatives. It is important in a financial analysis to look at not only the least costly alternative, but also at ensuring that the community and the individual users can afford the initial cost of the project and adequately operate and maintain it throughout its entire useful life. Recognizing the need to evaluate this financial capability, the Clean Water Act requires that grantees demonstrate financial capability prior to receiving a construction grant. To satisfy this requirement, a grantee must answer the following questions:

- What is proposed in the facility plan?

- What are the roles and responsibilities for local governments?

- How much will the facilities cost in today's prices?

- How will construction and operation of the facilities be financed?

- What are the annual cost for households of the facilities?

In addition, EPA guidance recommends that the applicant look at the community's financial resources to be sure that it can raise the capital necessary for the treatment facilities. Many of these questions are addressed in the financial capability guidebook published by EPA.

PLAN OF OPERATIONS

The grantee must submit a draft plan of operation for the utilities operation which includes an adequate budget identifying the basis for determining the annual operation, maintenance, and replacement cost including the costs of personnel, materials, energy, (O, M&R) and administration. Section VI--Financial Planning/Budgeting provides a basis for developing a operating budget to satisfy this requirement.

USER CHARGE SYSTEM

The Clean Water Act, Section 204(b), requires that each grantee develop an approved system of user charges to:

- ensure that users of the utility pay their proportional share of the operation, maintenance, and replacement costs; and

- ensure that the system generates sufficient revenues to provide for the proper operation, maintenance, and replacement costs of the treatment works.

Recovery of capital cost is necessary to obtain the revenues used to make the annual installment payment on construction costs. The utility's share of construction costs is normally financed by bonds which require annual payments of interest and principal. Frequently this annual debt service is financed with general property taxes. Federal regulations neither require nor prohibit capital costs from being recovered

through sewer service charges although state regulations may limit capital cost recovery options. Utility managers should be aware of state law restrictions on capital cost recovery.

The user charge system shall be based either on actual use or on ad valorem taxes. The system based on actual use (or estimated use) shall provide that each user pay a proportionate share of the operation and maintenance costs based on the user's proportionate contribution to the total wastewater loadings from all users.

Wastewater measurement is critical to ensure equitable apportionment in a system based on actual use. There are many acceptable ways to estimate wastewater flow, among them:

- percentage of metered water; and
- average water consumed during winter months.

In situations where the water flow cannot be measured, there are many acceptable ways to establish sewer service charges, among them size of water connection and number of water fixtures (i.e., toilets, sinks).

> The utility should adopt a policy which specifies that industrial equivalents will be periodically tested for strength characteristics.

Sewage strength is measured in terms of SS and BOD. The utility is required to know the discharge strength of each industrial equivalent for both biochemical oxygen demand (BOD) and suspended solids (SS).

A user charge system based on ad valorem taxes requires:

- that the grantee had in existence on December 27, 1977, a system of dedicated ad valorem taxes which collected revenues to pay the cost of operation and maintenance of the facilities and that the grantee has continued to use that system;
- that the ad valorem user charge system distributes the operation and maintenance costs for all treatment works in the grantee's jurisdiction to the residential and small non-residential user class and industrial users that introduce no more than the equivalent of 25,000 gallons per day of domestic sanitary waste, in proportion to the use of the treatment works by that class; and

- each member of the industrial and commercial user class discharging more than 25,000 gallons per day of sanitary waste pay its proportionate share of the cost of operation and maintenance based on charges for actual use.

Federal regulations require that user charge systems be reviewed annually and revised as needed to recover operating, maintenance, and equipment replacement costs. Wastewater operations are constantly changing. Flow and strength characteristics and the costs required to treat wastewater are not static. Where flow, strength, and billings are set by a contract between the utility and a user or users (i.e., industrial equivalents), efforts should be made to revise the contract to permit annual reviews and necessary sewer service charge adjustments.

The user charge system must provide that the cost of operation and maintenance for all flows not directly attributable to users (i.e., infiltration/inflow) be distributed among all users either in the same manner as the cost for actual users or under a system using one or a combination of the following:

- flow volume of the user;
- land area of the user;
- number of hookups or discharges of the user; or
- property value of the user.

FINANCIAL MANAGEMENT SYSTEMS

The regulations require that each user charge system include an adequate financial management system to accurately account for revenues generated by the system and expenditures for operation, maintenance, and replacement of the treatment works. This guidebook is intended to provide guidance in the establishment of a financial management system.

REFERENCES

The following references provide additional guidance to the regulatory requirements applicable to a utility's financial planning process.

1. Federal Water Pollution Control Act, Amendments of 1977, Public Law 95-217, the Clean Water Act.

2. 40 Code of Federal Regulations, Part 35, Interim Final Grants for Construction of Treatment Works.

3. U.S. EPA, User Charge Guidance Manual, 1984.

4. U.S. EPA, Financial Capability Guidebook, Office of Water Program Operations, February 1983.